Cisco Application Deployment Engine (ADE) 1010 and 2120 Series Appliance Hardware Installation Guide

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About This Guide

This preface describes who should read the *Cisco Application Deployment Engine (ADE) 1010 and 2120 Series Appliance Hardware Installation Guide*, and the objectives, audience, organization, and conventions for the guide.

Note Use this document along with the documents listed in the "Related Documentation" section on page xv.

This preface contains the following sections:

- Document Revision History, page vii
- Objectives, page viii
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Document Revision History

The following Document Revision History table records technical changes to this document. The table shows the document revision number for the change, the date of the change, and a brief summary of the change.

Revision	Date	Change Summary
78-18578-02	April 2, 2008	Updated guide with correct banner photo, added Document Revision History, updated Figure 1-2 on page 4 with new location, Table 1-2 on page 5, Table 1-3 on page 5, Figure A-3 on page 7, and fixed inconsistencies with some figures for on-line and PDF versions.
78-18578-01	February 22, 2007	Changed document to printed document from on-line document.
OL-14301-01	October 5, 2007	Initial release.

Objectives

This guide explains how to prepare your site for installation, how to install the Cisco ADE 1010 and 2120 Series appliance in an equipment rack, and how to troubleshoot and maintain the appliance. After completing the appliance installation procedures covered in this guide, you then use the appropriate publications to configure your appliance.

Warranty, service, and support information is located in the *Cisco Information Packet* that shipped with your appliance.

Audience

This guide is designed for personnel who install, configure, and maintain the Cisco ADE 1010 and 2120 Series appliance. To use this hardware publication, you should be familiar with internetworking equipment and cabling, and have a basic knowledge of electronic circuitry and wiring practices.

Warning **Only trained and qualified personnel should be allowed to install, replace, or service this equipment.** Statement 1030

Organization

The major sections of this hardware installation guide are listed in the following table.

Chapter	Title	Description
Chapter 1	Introducing the Cisco Application Deployment Engine 1010 and 2120 Series Appliance	Describes the hardware features and specifications of the Cisco ADE 1010 and 2120 Series appliance.
Chapter 2	Preparing to Install the Cisco ADE 1010 and 2120 Series Appliance	Describes the safety recommendations, site requirements, network connection considerations, required tools and equipment, and provides an installation checklist.
Chapter 3	Installing the Cisco ADE 1010 and 2120 Series Appliance	Includes appliance installation information, including how to connect the appliance console and network ports.
Chapter 4	Installing the Cisco ADE 1010 and 2120 Series Appliance Hardware Options	Describes how to install and remove the hardware options available, including DIMM memory, hard disk drives, and the optical drive.
Appendix A	Troubleshooting	Describes troubleshooting procedures for the appliance.
Appendix B	Site Log	Provides a sample site log.
Appendix C	Maintaining the Cisco ADE 1010 and 2120 Appliance	Contains the procedures for keeping your appliance in good condition.

Conventions

This guide uses the following conventions to convey instructions and information.

Note Means *reader take note*. Notes contain helpful suggestions or references to material not covered in the manual.

Timesaver Means *the described action saves time*. You can save time by performing the action described in the paragraph.

Tip Means *the following information will help you solve a problem*. The tips information might not be troubleshooting or even an action, but could be useful information, similar to a Timesaver.

Caution Means *reader be careful*. In this situation, you might do something that could result in equipment damage or loss of data.

Safety Warnings

Safety warnings appear throughout this publication in procedures that, if performed incorrectly, might harm you. A warning symbol precedes each warning statement. The safety warnings provide safety guidelines that you should follow when working with any equipment that connects to electrical power or telephone wiring. Included in the warnings are translations in several languages. (Refer to the *Cisco Regulatory Compliance and Safety Information for the Cisco Application Deployment Engine (ADE) 1010 and 2120 Series Appliance* for detailed information about compliance guidelines and translated safety warnings.)

Warning **IMPORTANT SAFETY INSTRUCTIONS**

This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device. Statement 1071

SAVE THESE INSTRUCTIONS

Waarschuwing **BELANGRIJKE VEILIGHEIDSINSTRUCTIES**

Dit waarschuwingssymbool betekent gevaar. U verkeert in een situatie die lichamelijk letsel kan veroorzaken. Voordat u aan enige apparatuur gaat werken, dient u zich bewust te zijn van de bij elektrische schakelingen betrokken risico's en dient u op de hoogte te zijn van de standaard praktijken om ongelukken te voorkomen. Gebruik het nummer van de verklaring onderaan de waarschuwing als u een vertaling van de waarschuwing die bij het apparaat wordt geleverd, wilt raadplegen.

BEWAAR DEZE INSTRUCTIES

Varoitus **TÄRKEITÄ TURVALLISUUSOHJEITA**

Tämä varoitusmerkki merkitsee vaaraa. Tilanne voi aiheuttaa ruumiillisia vammoja. Ennen kuin käsittelet laitteistoa, huomioi sähköpiirien käsittelemiseen liittyvät riskit ja tutustu onnettomuuksien yleisiin ehkäisytapoihin. Turvallisuusvaroitusten käännökset löytyvät laitteen mukana toimitettujen käännettyjen turvallisuusvaroitusten joukosta varoitusten lopussa näkyvien lausuntonumeroiden avulla.

SÄILYTÄ NÄMÄ OHJEET

Attention **IMPORTANTES INFORMATIONS DE SÉCURITÉ**

Ce symbole d'avertissement indique un danger. Vous vous trouvez dans une situation pouvant entraîner des blessures ou des dommages corporels. Avant de travailler sur un équipement, soyez conscient des dangers liés aux circuits électriques et familiarisez-vous avec les procédures couramment utilisées pour éviter les accidents. Pour prendre connaissance des traductions des avertissements figurant dans les consignes de sécurité traduites qui accompagnent cet appareil, référez-vous au numéro de l'instruction situé à la fin de chaque avertissement.

CONSERVEZ CES INFORMATIONS

Warnung **WICHTIGE SICHERHEITSHINWEISE**

Dieses Warnsymbol bedeutet Gefahr. Sie befinden sich in einer Situation, die zu Verletzungen führen kann. Machen Sie sich vor der Arbeit mit Geräten mit den Gefahren elektrischer Schaltungen und den üblichen Verfahren zur Vorbeugung vor Unfällen vertraut. Suchen Sie mit der am Ende jeder Warnung angegebenen Anweisungsnummer nach der jeweiligen Übersetzung in den übersetzten Sicherheitshinweisen, die zusammen mit diesem Gerät ausgeliefert wurden.

BEWAHREN SIE DIESE HINWEISE GUT AUF.

Avvertenza **IMPORTANTI ISTRUZIONI SULLA SICUREZZA**

Questo simbolo di avvertenza indica un pericolo. La situazione potrebbe causare infortuni alle persone. Prima di intervenire su qualsiasi apparecchiatura, occorre essere al corrente dei pericoli relativi ai circuiti elettrici e conoscere le procedure standard per la prevenzione di incidenti. Utilizzare il numero di istruzione presente alla fine di ciascuna avvertenza per individuare le traduzioni delle avvertenze riportate in questo documento.

CONSERVARE QUESTE ISTRUZIONI

Advarsel **VIKTIGE SIKKERHETSINSTRUKSJONER**

Dette advarselssymbolet betyr fare. Du er i en situasjon som kan føre til skade på person. Før du begynner å arbeide med noe av utstyret, må du være oppmerksom på farene forbundet med elektriske kretser, og kjenne til standardprosedyrer for å forhindre ulykker. Bruk nummeret i slutten av hver advarsel for å finne oversettelsen i de oversatte sikkerhetsadvarslene som fulgte med denne enheten.

TA VARE PÅ DISSE INSTRUKSJONENE

Aviso **INSTRUÇÕES IMPORTANTES DE SEGURANÇA**

Este símbolo de aviso significa perigo. Você está em uma situação que poderá ser causadora de lesões corporais. Antes de iniciar a utilização de qualquer equipamento, tenha conhecimento dos perigos envolvidos no manuseio de circuitos elétricos e familiarize-se com as práticas habituais de prevenção de acidentes. Utilize o número da instrução fornecido ao final de cada aviso para localizar sua tradução nos avisos de segurança traduzidos que acompanham este dispositivo.

GUARDE ESTAS INSTRUÇÕES

¡Advertencia! **INSTRUCCIONES IMPORTANTES DE SEGURIDAD**

Este símbolo de aviso indica peligro. Existe riesgo para su integridad física. Antes de manipular cualquier equipo, considere los riesgos de la corriente eléctrica y familiarícese con los procedimientos estándar de prevención de accidentes. Al final de cada advertencia encontrará el número que le ayudará a encontrar el texto traducido en el apartado de traducciones que acompaña a este dispositivo.

GUARDE ESTAS INSTRUCCIONES

Varning! **VIKTIGA SÄKERHETSANVISNINGAR**

Denna varningssignal signalerar fara. Du befinner dig i en situation som kan leda till personskada. Innan du utför arbete på någon utrustning måste du vara medveten om farorna med elkretsar och känna till vanliga förfaranden för att förebygga olyckor. Använd det nummer som finns i slutet av varje varning för att hitta dess översättning i de översatta säkerhetsvarningar som medföljer denna anordning.

SPARA DESSA ANVISNINGAR

Figyelem

FONTOS BIZTONSÁGI ELOÍRÁSOK

Ez a figyelmezeto jel veszélyre utal. Sérülésveszélyt rejto helyzetben van. Mielott bármely berendezésen munkát végezte, legyen figyelemmel az elektromos áramkörök okozta kockázatokra, és ismerkedjen meg a szokásos balesetvédelmi eljárásokkal. A kiadványban szereplo figyelmeztetések fordítása a készülékhez mellékelt biztonsági figyelmeztetések között található; a fordítás az egyes figyelmeztetések végén látható szám alapján keresheto meg.

ORIZZE MEG EZEKET AZ UTASÍTÁSOKAT!

Предупреждение

ВАЖНЫЕ ИНСТРУКЦИИ ПО СОБЛЮДЕНИЮ ТЕХНИКИ БЕЗОПАСНОСТИ

Этот символ предупреждения обозначает опасность. То есть имеет место ситуация, в которой следует опасаться телесных повреждений. Перед эксплуатацией оборудования выясните, каким опасностям может подвергаться пользователь при использовании электрических цепей, и ознакомьтесь с правилами техники безопасности для предотвращения возможных несчастных случаев. Воспользуйтесь номером заявления, приведенным в конце каждого предупреждения, чтобы найти его переведенный вариант в переводе предупреждений по безопасности, прилагаемом к данному устройству.

СОХРАНИТЕ ЭТИ ИНСТРУКЦИИ

警告 重要的安全性说明

此警告符号代表危险。您正处于可能受到严重伤害的工作环境中。在您使用设备开始工作之前，必须充分意识到触电的危险，并熟练掌握防止事故发生的标准工作程序。请根据每项警告结尾提供的声明号码来找到此设备的安全性警告说明的翻译文本。

请保存这些安全性说明

警告 安全上の重要な注意事項

「危険」の意味です。人身事故を予防するための注意事項が記述されています。装置の取り扱い作業を行うときは、電気回路の危険性に注意し、一般的な事故防止策に留意してください。警告の各国語版は、各注意事項の番号を基に、装置に付属の「Translated Safety Warnings」を参照してください。

これらの注意事項を保管しておいてください。

주의 중요 안전 지침

이 경고 기호는 위험을 나타냅니다. 작업자가 신체 부상을 일으킬 수 있는 위험한 환경에 있습니다. 장비에 작업을 수행하기 전에 전기 회로와 관련된 위험을 숙지하고 표준 작업 관례를 숙지하여 사고를 방지하십시오. 각 경고의 마지막 부분에 있는 경고문 번호를 참조하여 이 장치와 함께 제공되는 번역된 안전 경고문에서 해당 번역문을 찾으십시오.

이 지시 사항을 보관하십시오.

Aviso

INSTRUÇÕES IMPORTANTES DE SEGURANÇA

Este símbolo de aviso significa perigo. Você se encontra em uma situação em que há risco de lesões corporais. Antes de trabalhar com qualquer equipamento, esteja ciente dos riscos que envolvem os circuitos elétricos e familiarize-se com as práticas padrão de prevenção de acidentes. Use o número da declaração fornecido ao final de cada aviso para localizar sua tradução nos avisos de segurança traduzidos que acompanham o dispositivo.

GUARDE ESTAS INSTRUÇÕES

Advarsel

VIGTIGE SIKKERHEDSANVISNINGER

Dette advarselssymbol betyder fare. Du befinder dig i en situation med risiko for legemesbeskadigelse. Før du begynder arbejde på udstyr, skal du være opmærksom på de involverede risici, der er ved elektriske kredsløb, og du skal sætte dig ind i standardprocedurer til undgåelse af ulykker. Brug erklæringsnummeret efter hver advarsel for at finde oversættelsen i de oversatte advarsler, der fulgte med denne enhed.

GEM DISSE ANVISNINGER

تحذير

إرشادات الأمان الهامة

يوضح رمز التحذير هذا وجود خطر. وهذا يعني أنك متواجد في مكان قد ينتج عنه التعرض لإصابات. قبل بدء العمل، احذر مخاطر التعرض للصدمات الكهربائية وكن على علم بالإجراءات القياسية للحيلولة دون وقوع أي حوادث. استخدم رقم البيان الموجود في أخر كل تحذير لتحديد مكان ترجمته داخل تحذيرات الأمان المترجمة التي تأتي مع الجهاز.

قم بحفظ هذه الإرشادات

Upozorenje

VAŽNE SIGURNOSNE NAPOMENE

Ovaj simbol upozorenja predstavlja opasnost. Nalazite se u situaciji koja može prouzročiti tjelesne ozljede. Prije rada s bilo kojim uređajem, morate razumjeti opasnosti vezane uz električne sklopove, te biti upoznati sa standardnim načinima izbjegavanja nesreća. U prevedenim sigurnosnim upozorenjima, priloženima uz uređaj, možete prema broju koji se nalazi uz pojedino upozorenje pronaći i njegov prijevod.

SAČUVAJTE OVE UPUTE

Upozornění

DŮLEŽITÉ BEZPEČNOSTNÍ POKYNY

Tento upozorňující symbol označuje nebezpečí. Jste v situaci, která by mohla způsobit nebezpečí úrazu. Před prací na jakémkoliv vybavení si uvědomte nebezpečí související s elektrickými obvody a seznamte se se standardními opatřeními pro předcházení úrazům. Podle čísla na konci každého upozornění vyhledejte jeho překlad v přeložených bezpečnostních upozorněních, která jsou přiložena k zařízení.

USCHOVEJTE TYTO POKYNY

Προειδοποίηση

ΣΗΜΑΝΤΙΚΕΣ ΟΔΗΓΙΕΣ ΑΣΦΑΛΕΙΑΣ

Αυτό το προειδοποιητικό σύμβολο σημαίνει κίνδυνο. Βρίσκεστε σε κατάσταση που μπορεί να προκαλέσει τραυματισμό. Πριν εργαστείτε σε οποιοδήποτε εξοπλισμό, να έχετε υπόψη σας τους κινδύνους που σχετίζονται με τα ηλεκτρικά κυκλώματα και να έχετε εξοικειωθεί με τις συνήθεις πρακτικές για την αποφυγή ατυχημάτων. Χρησιμοποιήστε τον αριθμό δήλωσης που παρέχεται στο τέλος κάθε προειδοποίησης, για να εντοπίσετε τη μετάφρασή της στις μεταφρασμένες προειδοποιήσεις ασφαλείας που συνοδεύουν τη συσκευή.

ΦΥΛΑΞΤΕ ΑΥΤΕΣ ΤΙΣ ΟΔΗΓΙΕΣ

אזהרה

הוראות בטיחות חשובות

סימן אזהרה זה מסמל סכנה. אתה נמצא במצב העלול לגרום לפציעה. לפני שתעבוד עם ציוד כלשהו, עליך להיות מודע לסכנות הכרוכות במעגלים חשמליים ולהכיר את הנהלים המקובלים למניעת תאונות. השתמש במספר ההוראה המסופק בסופה של כל אזהרה כד לאתר את התרגום באזהרות הבטיחות המתורגמות שמצורפות להתקן.

שמור הוראות אלה

Opomena

ВАЖНИ БЕЗБЕДНОСНИ НАПАТСТВИЈА

Симболот за предупредување значи опасност. Се наоѓате во ситуација што може да предизвика телесни повреди. Пред да работите со опремата, бидете свесни за ризикот што постои кај електричните кола и треба да ги познавате стандардните постапки за спречување на несреќни случаи. Искористете го бројот на изјавата што се наоѓа на крајот на секое предупредување за да го најдете неговиот период во преведените безбедносни предупредувања што се испорачани со уредот.

ЧУВАЈТЕ ГИ ОВИЕ НАПАТСТВИЈА

Ostrzeżenie

WAŻNE INSTRUKCJE DOTYCZĄCE BEZPIECZEŃSTWA

Ten symbol ostrzeżenia oznacza niebezpieczeństwo. Zachodzi sytuacja, która może powodować obrażenia ciała. Przed przystąpieniem do prac przy urządzeniach należy zapoznać się z zagrożeniami związanymi z układami elektrycznymi oraz ze standardowymi środkami zapobiegania wypadkom. Na końcu każdego ostrzeżenia podano numer, na podstawie którego można odszukać tłumaczenie tego ostrzeżenia w dołączonym do urządzenia dokumencie z tłumaczeniami ostrzeżeń.

NINIEJSZE INSTRUKCJE NALEŻY ZACHOWAĆ

Upozornenie

DÔLEŽITÉ BEZPEČNOSTNÉ POKYNY

Tento varovný symbol označuje nebezpečenstvo. Nachádzate sa v situácii s nebezpečenstvom úrazu. Pred prácou na akomkoľvek vybavení si uvedomte nebezpečenstvo súvisiace s elektrickými obvodmi a oboznámte sa so štandardnými opatreniami na predchádzanie úrazom. Podľa čísla na konci každého upozornenia vyhľadajte jeho preklad v preložených bezpečnostných upozorneniach, ktoré sú priložené k zariadeniu.

USCHOVAJTE SI TENTO NÁVOD

Related Documentation

For information beyond the scope of this document, or for additional information about the Cisco ADE 1010 and 2120 Series appliance, refer to the following publications:

- *Cisco Regulatory Compliance and Safety Information for the Cisco Application Deployment Engine (ADE) 1010 and 2120 Series Appliance*
- *Cisco Application Deployment Engine Appliance (ADE) 1010 and 2120 Series Appliance Release Notes*

Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, submitting a service request, and gathering additional information, see the monthly *What's New in Cisco Product Documentation*, which also lists all new and revised Cisco technical documentation, at:

http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html

Subscribe to the *What's New in Cisco Product Documentation* as a Really Simple Syndication (RSS) feed and set content to be delivered directly to your desktop using a reader application. The RSS feeds are a free service and Cisco currently supports RSS version 2.0.

CHAPTER 1

Introducing the Cisco Application Deployment Engine 1010 and 2120 Series Appliance

This chapter provides a functional overview of the Cisco Application Deployment Engine (ADE) 1010 and 2120 Series appliance and describes the appliance hardware, major components, and front and rear panel LED indicators, controls, and connectors.

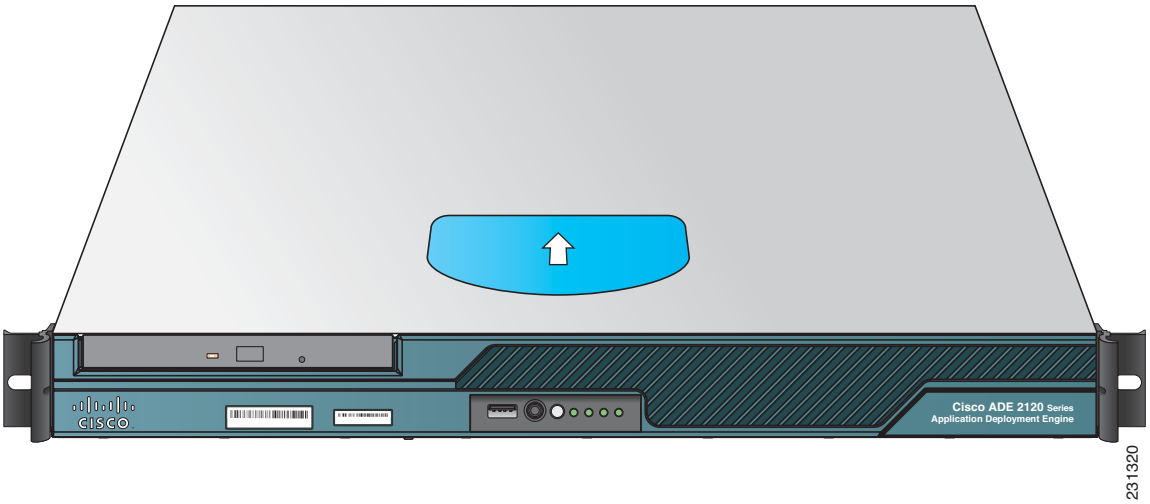
This chapter includes the following sections:

- Product Overview, page 1-2
- Hardware Features, page 1-5
- Environmental Monitoring, page 1-10
- Regulatory Compliance, page 1-11

Product Overview

The Cisco ADE 1010 and 2120 Series appliance (see Figure 1-1) is contained in a standard shelf-rack enclosure. The appliance weighs from 15 lb (9.071 kg) to 33 lb (14.96 kg) depending on what options are installed in the appliance. It measures 1.69 inches high x 17 inches wide x 20 inches deep (4.29 cm x 43.18 cm x 50.80 cm). These dimensions do not include the rack handles.

Figure 1-1 Cisco ADE 1010 and 2120 Series Appliance Front View



This guide describes the Cisco ADE 1010 and 2120 Series appliance models listed in Table 1-1.

Table 1-1 Cisco ADE 1010 and 2120 Series Appliance Models

Model	Cisco Product Number
Cisco Application Deployment Engine Series 1010	CADE-1010-K9
Cisco Application Deployment Engine Series 2120	CADE-2120-K9

Note See Chapter 4, "Installing the Cisco ADE 1010 and 2120 Series Appliance Hardware Options," for upgrade options and spare part numbers.

The Cisco ADE 1010 and 2120 Series appliance is configured for AC-input power and has a single auto-ranging AC-input power supply, mounted in a standard 19-inch (48.3 cm) 2- or 4-post equipment rack (using the rack-mount brackets provided), and includes the following features:

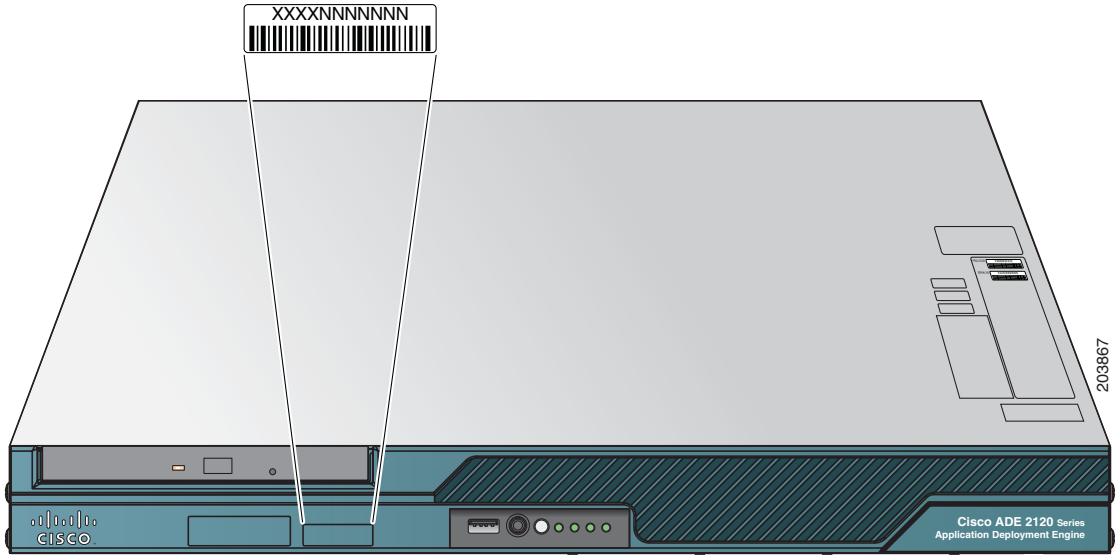
- Microprocessor:
  - Cisco ADE 1010 Series appliance—Intel Celeron D 352 3.2-GHz processor with a 533-MHz front side bus (FSB) and 512 KB of Layer 2 cache (for the Cisco ADE 1010 Series appliance specifications, see Table 1-2 on page 1-5)
  - Cisco ADE 2120 Series appliance—Intel Core 2 Duo 2.13-GHz processor with an 800-MHz front side bus (FSB) and 2 MB of Layer 2 cache (for the Cisco ADE 2120 Series appliance specifications, see Table 1-3 on page 1-5)
- Four synchronous dynamic RAM (SDRAM) slots support up to 4 GB (1 GB factory installed)

- Support for up to 2 x 250-GB SATA hard drives (1 x 250-GB SATA hard drive factory installed)
- Two fixed RJ-45 10BASE-T/100BASE-TX/1000BASE-T network interface connectors (located on the rear panel)
- One slimline DVD-ROM drive (located on the front panel)
- One DB-9 serial (console) port (located on the rear panel)
- Front-to-rear airflow blowers using two 40-mm exhaust fans and ducting for the CPU and memory, two 40-mm exhaust fans built in to the power supply, and one PCI exhaust fan
- Expansion slot support, ADE 2120 Series appliance only (located on the rear panel):
  - One PCI-X (See Table 1-3 on page 1-5.)
- Three USB 2.0 ports (two located on the rear panel, one on the front panel)
- One PS/2 (keyboard) port (located on the rear panel)
- One PS/2 (mouse) port (located on the rear panel)
- One DB-15 serial (video) port (located on the rear panel)
- Rear-access cabling
- Four green front-panel appliance LEDs (for a description, see the "Cisco ADE 1010 and 2120 Series Appliance Front View" section on page 1-6):
  - Power (indicates whether the power supply is operational)
  - Hard disk drive activity (indicates whether the drive is functioning properly)
  - NIC 1 and NIC 2 activity (indicates whether interrupts or packet transfers are running)
- The Cisco ADE 1010 and 2120 Series appliance is normally shipped with:
  - Rack-mount kit includes either brackets or rails allowing the Cisco ADE 1010 and 2120 Series appliance to be positioned in a 2- or 4-post equipment rack. (See Chapter 3, "Installing the Cisco ADE 1010 and 2120 Series Appliance.")

Product Serial Number Location

On the Cisco ADE 1010 and 2120 Series appliance, the serial number label is located on the front of the appliance, at the lower-left. (See Figure 1-2.)

Figure 1-2 Cisco ADE 1010 and 2120 Series Appliance Serial Number Location



Note The serial number for the Cisco ADE 1010 and 2120 Series appliance is 11 characters long.

Cisco Product Identification Tool

The Cisco Product Identification (CPI) tool helps you retrieve the serial number of your Cisco products.

Before you submit a request for service online or by phone, use the CPI tool to locate your product serial number. You can access this tool from the Cisco Support website by clicking the **Get Tools & Resources** link, clicking the **All Tools (A-Z)** tab, and then choosing **Cisco Product Identification Tool** from the alphabetical list.

This tool offers three search options:

- Search by product ID or model name
- Browse for Cisco model
- Copy and paste the output of the **show** command to identify the product

Search results show an illustration of your product with the serial number label location highlighted. Locate the serial number label on your product and record the information before you place a service call.

The CPI tool is accessed via Cisco.com at the following URL:

http://tools.cisco.com/Support/CPI/index.do

Access to the CPI tool on the Cisco Support website requires a Cisco.com user ID and password. If you have a valid service contract but do not have a user ID or password, you can register at:

http://tools.cisco.com/RPF/register/register.do

Cisco ADE 1010 and 2120 Series Appliance Configurations

The Cisco ADE 1010 and 2120 Series appliance models are configured differently.

Cisco ADE 1010 Series Appliance

The Cisco ADE 1010 Series appliance is a base-end Application Deployment Engine. Table 1-2 lists the processor, memory, hard disk drive, and expansion slot specifications.

Table 1-2 Cisco ADE 1010 Series Appliance

Specification	Description	Cisco Spare Part Number[1]
Microprocessor	Intel Celeron D 352 3.2-GHz processor with a 533-MHz front side bus (FSB) and 512 KB of Layer 2 cache	
Memory	1-GB SDRAM	CADE-RAM-15EU=
Hard disk drives	1 x 250-GB SATA hard drive factory installed	CADE-HDD-T3720250=
Expansion slot	None	
RAID Options	Firmware-based RAID 0 or 1	

1. See Chapter 4, "Installing the Cisco ADE 1010 and 2120 Series Appliance Hardware Options," for hardware option descriptions and installation and removal procedures.

Cisco ADE 2120 Series Appliance

The Cisco ADE 2120 Series appliance is a base-end Application Deployment Engine with a faster processor and a configurable expansion slot. Table 1-3 lists the processor, memory, hard disk drive, and expansion slot specifications.

Table 1-3 Cisco ADE 2120 Series Appliance

Specification	Description	Cisco Spare Part Number[1]
Microprocessor	Intel Core 2 Duo 2.13-GHz processor with an 800-MHz front side bus (FSB) and 2 MB of Layer 2 cache	
Memory	1-GB SDRAM	CADE-RAM-15EU=
Hard disk drives	1 x 250-GB SATA hard drive factory installed	CADE-HDD-T3720250=
Expansion slot	PCI-X (See Chapter 4, "Installing the Cisco ADE 1010 and 2120 Series Appliance Hardware Options," for upgrade options, descriptions of spare parts, and part numbers.)	
RAID Options	Firmware-based RAID 0 or 1	

1. See Chapter 4, "Installing the Cisco ADE 1010 and 2120 Series Appliance Hardware Options," for hardware option descriptions and installation and removal procedures.

Hardware Features

This section illustrates and describes the front- and rear-panel controls, ports, and LED indicators on the Cisco ADE 1010 and 2120 Series appliance.

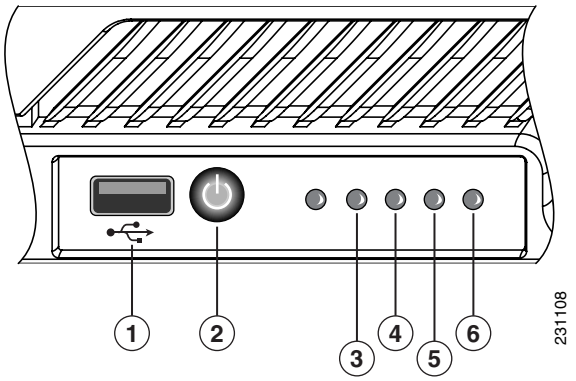
Cisco ADE 1010 and 2120 Series Appliance Front View

On the front panel, viewing from left to right, the Cisco ADE 1010 and 2120 Series appliance includes the following components:

- USB 2.0 port
- Power button
- Various LEDs (appliance and NICs)

Figure 1-3 on page 1-6 shows the orientation of these components.

Figure 1-3 Cisco ADE 1010 and 2120 Series Appliance Front View



1	USB port	**4**	Hard Disk Drive Activity LED
2	Power button	**5**	NIC 1 LED
3	Appliance Power LED	**6**	NIC 2 LED

LEDs

Table 1-4 describes the Cisco ADE 1010 and 2120 Series appliance LEDs located on the front panel.

Table 1-4 Front-Panel LEDs

LED	Color	State	Description
Appliance Power	Green	On	Power on
	Green	Blinking	Sleep (standby)
	Off	Off	Power off
Hard Disk Drive	Green	Random blinking	HDD activity
	Off	Off	No HDD activity
NIC 1 and NIC 2	Green	On	NIC link, no access
	Green	Blinking	LAN access

Cisco ADE 1010 and 2120 Series Appliance Rear View

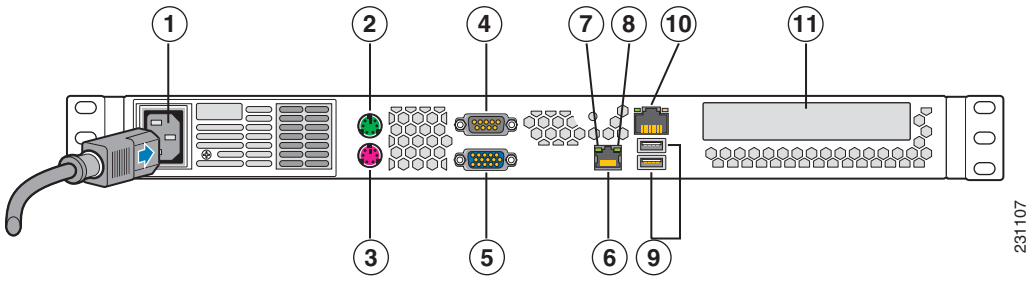
On the rear panel, viewing from left to right, the Cisco ADE 1010 and 2120 Series appliance includes the following components:

- AC power connector
- Two PS/2 connectors (mouse and keyboard)
- One serial (DB-9) connector
- One video connector
- Two NIC (RJ-45) ports
- Two USB 2.0 ports
- One PCI adapter card slot (expansion slot)
- NIC LEDs

Figure 1-4 shows the orientation of these components.

Note The locations of the rack-mounting brackets are also shown on the left and right sides of the appliance. (See the "Rack-Mounting Configuration Guidelines" section on page 3-2 for instructions on how to install the mounting brackets.)

Figure 1-4 Cisco ADE 1010 and 2120 Series Appliance Rear View



1	AC power receptacle	**7**	NIC 2 port LED (activity)
2	PS/2 connector (mouse)	**8**	NIC 2 port LED (link)
3	PS/2 connector (keyboard)	**9**	Two USB ports (2.0)
4	Serial (EIA/TIA-232) console port	**10**	NIC 1 port (10/100/1000 Mb/s) or Ethernet 0
5	Video (VGA) port	**11**	PCI adapter card slot (expansion)
6	NIC 2 (10/100/1000 Mb/s) port or Ethernet 1		

LEDs

The rear of the Cisco ADE 1010 and 2120 Series appliance includes LEDs that indicate the connection activity and speed of the NIC ports. (See Figure 1-5.)

Table 1-5 on page 1-8 describes the activity and connection speed associated with each LED state.

Figure 1-5 NIC 1 and NIC 2 LEDs

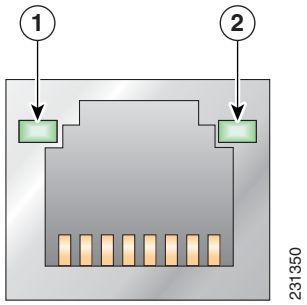


Table 1-5 NIC 1 and NIC 2 LEDs

LED	Color	State	Description
Left (1)		Off	No network connection
	Amber	Solid	Network connection
	Amber	Blinking	Transmit/receive activity
Right (2)		Off	10-Mb/s connection (if left LED is on or blinking)
	Amber	Solid	100-Mb/s connection
	Green	Solid	1000-Mb/s (or 1-Gb/s) connection

Input/Output Ports and Connectors

The Cisco ADE 1010 and 2120 Series appliance supports the following I/O connectors on the rear of the appliance:

- Ethernet connectors
- Serial connector
- Video connector
- Mouse connector
- Keyboard connector

Warning **To avoid electric shock, do not connect safety extra-low voltage (SELV) circuits to telephone-network voltage (TNV) circuits. LAN ports contain SELV circuits, and WAN ports contain TNV circuits. Some LAN and WAN ports both use RJ-45 connectors. Use caution when connecting cables.** Statement 1021

Ethernet Port (NIC 1 and NIC 2)

The Cisco ADE 1010 and 2120 Series appliance comes with two integrated dual-port Ethernet controllers. These controllers provide an interface for connecting to 10-Mb/s, 100-Mb/s, or 1000-Mb/s networks and provide full-duplex (FDX) capability, which enables simultaneous transmission and reception of data on the Ethernet local-area network (LAN).

To access the Ethernet port, connect a Category 3, 4, 5, 5E, or 6 unshielded twisted-pair (UTP) cable to the RJ-45 connector on the back of the appliance. (See Table 1-6.)

Table 1-6 Ethernet Cabling Guidelines

Type	Description
10BASE-T	EIA Categories 3, 4, or 5 UTP (2 or 4 pair) up to 328 ft (100 m)
100BASE-TX	EIA Category 5 UTP (2 pair) up to 328 ft (100 m)
1000BASE-T	EIA Category 6 UTP (recommended), Category 5E UTP or 5 UTP (2 pair) up to 328 ft (100 m)

Ethernet Port Connector

Figure 1-6 on page 1-9 shows the Ethernet RJ-45 port and plug.

Figure 1-6 RJ-45 Port and Plug

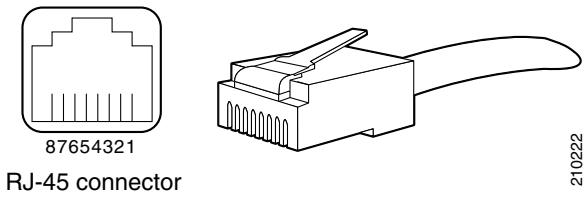


Table 1-7 lists the RJ-45 pin signals used on the connector.

Table 1-7 Ethernet Port Pinout

Ethernet Port Pin	Signal	Description
1	TxD+	Transmit data +
2	TxD–	Transmit data –
3	RxD+	Receive data +
4	Termination network	No connection
5	Termination network	No connection
6	RxD–	Receive data –
7	Termination network	No connection
8	Termination network	No connection

Serial (Console) Port

The Cisco ADE 1010 and 2120 Series appliance has one standard serial (console) port. Use the configuration/setup utility program to change the port address assignments.

Note The configuration/setup utility program is located in the Cisco ADE 1010 and 2120 Series appliance ROM and can be accessed through the serial (console) port.

Serial (Console) Port Connector

The Cisco ADE 1010 and 2120 Series appliance has one serial port connector located on the back of the appliance.

Figure 1-7 shows the pin number assignments for the 9-pin, male D-shell serial port connector on the back of the appliance. These pin number assignments conform to industry standards.

Figure 1-7 Serial Port Connector

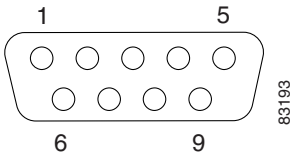


Table 1-8 shows the serial (console) port pinout description.

Table 1-8 DB-9 Serial (Console) Port Pinout

Serial Port Pin	Signal	Description
1	DCD	Carrier Detect
2	DSR	Data Set Ready
3	RXD	Receive Data
4	RTS	Request To Send
5	TXD	Transmit Data
6	CTS	Clear To Send
7	DTR	Data Terminal Ready
8	RI	Ring Indicator
9	GND	Ground

Environmental Monitoring

The Cisco ADE 1010 and 2120 Series appliance has protection circuits that monitor and detect overcurrent, overvoltage, and overtemperature conditions inside the appliance. If the power supply shuts down or latches off, an AC cycle of off for 15 seconds and on for 1 second will reset the power supply.

Overcurrent Protection (OCP)

The power supply shuts down and latches off after an overcurrent condition occurs. This latch is cleared by an AC power interruption.

Note The power supply will not be damaged from repeated power cycling.

Overvoltage Protection (OVP)

The power supply shuts down and latches off after an overvoltage condition occurs. This latch is cleared by an AC power interruption.

Overtemperature Protection (OTP)

The power supply is protected against overtemperature conditions caused by the loss of fan cooling or excessive ambient temperature. In an OTP condition, the power supply will shut down. When the power supply temperature drops to the rated safety limit, the power supply restores power automatically.

Regulatory Compliance

For regulatory compliance and safety information, see the Cisco *Regulatory Compliance and Safety Information for the Cisco Application Deployment Engine (ADE) 1010 and 2120 Series Appliance* document. This document is available online at Cisco.com (see the "Obtaining Documentation and Submitting a Service Request" section on page xv for more information).

CHAPTER 2

Preparing to Install the Cisco ADE 1010 and 2120 Series Appliance

This chapter describes the tasks you must perform before you install a Cisco ADE 1010 and 2120 Series appliance.

This chapter contains the following sections:

- Safety Guidelines, page 2-2
- Preparing Your Site for Installation, page 2-6
- Ethernet and Console Port Considerations, page 2-15

Note Read the *Regulatory Compliance and Safety Information for the Cisco Application Deployment Engine (ADE) 1010 and 2120 Series Appliance* document and the *Site Preparation and Safety Guide* that came with your Cisco ADE 1010 and 2120 Series appliance before you begin the installation.

Safety Guidelines

Before you begin installing the Cisco ADE 1010 and 2120 Series appliance, review the safety guidelines in this chapter and the "Rack-Mounting Configuration Guidelines" section on page 3-2 to avoid injuring yourself or damaging the equipment.

In addition, before replacing, configuring, or maintaining the appliance, review the safety warnings listed in the "Safety Warnings" section on page ix and in the *Cisco Regulatory Compliance and Safety Information for the Cisco Application Deployment Engine (ADE) 1010 and 2120 Series Appliance* document.

General Precautions

Observe the following general precautions for using and working with your appliance:

- Observe and follow service markings. Do not service any Cisco product except as explained in your appliance documentation. Opening or removing covers that are marked with the triangular symbol with a lightning bolt may expose you to electrical shock. Components inside these compartments should be serviced only by an authorized service technician.
- If any of the following conditions occur, unplug the product from the electrical outlet and replace the part or contact your authorized service provider:
  - The power cable, extension cord, or plug is damaged.
  - An object has fallen into the product.
  - The product has been exposed to water.
  - The product has been dropped or damaged.
  - The product does not operate correctly when you follow the operating instructions.
- Keep your appliance away from radiators and heat sources. Also, do not block cooling vents.
- Do not spill food or liquids on your appliance, and never operate the product in a wet environment.
- Do not push any objects into the openings of your appliance. Doing so can cause fire or electric shock by shorting out interior components.
- Use the product only with other equipment approved by Cisco.
- Allow the product to cool before removing covers or touching internal components.
- Use the correct external power source. Operate the product only from the type of power source indicated on the electrical ratings label. If you are not sure of the type of power source required, consult your service representative or local power company.
- Use only approved power cables. If you have not been provided with a power cable for your appliance or for any AC-powered option intended for your appliance, purchase a power cable that is approved for use in your country. The power cable must be rated for the product and for the voltage and current marked on the product's electrical ratings label. The voltage and current rating of the cable should be greater than the ratings marked on the product.
- To help prevent electric shock, plug the appliance and power cables into properly grounded electrical outlets. These cables are equipped with three-prong plugs to help ensure proper grounding. Do not use adapter plugs or remove the grounding prong from a cable. If you must use an extension cord, use a three-wire cord with properly grounded plugs.

- Observe extension cord and power strip ratings. Make sure that the total ampere rating of all products plugged into the extension cord or power strip does not exceed 80 percent of the extension cord or power strip ampere ratings limit.
- Do not use appliance or voltage converters or kits sold for appliances with your product.
- To help protect your appliance from sudden, transient increases and decreases in electrical power, use a surge suppressor, line conditioner, or uninterruptible power supply (UPS).
- Position cables and power cords carefully; route cables and the power cord and plug so that they cannot be stepped on or tripped over. Be sure that nothing rests on your appliance cables or power cord.
- Do not modify power cables or plugs. Consult a licensed electrician or your power company for site modifications. Always follow your local or national wiring rules.

Safety with Equipment

The following guidelines will help ensure your safety and protect the equipment. However, this list does not include all potentially hazardous situations, so be *alert*.

Warning **Read the installation instructions before connecting the system to the power source.** Statement 1004

- Always disconnect all power cords and interface cables before moving the appliance.
- Never assume that power is disconnected from a circuit; *always* check.
- Keep the appliance chassis area clear and dust-free before and after installation.
- Keep tools and assembly components away from walk areas where you or others could fall over them.
- Do not work alone if potentially hazardous conditions exist.
- Do not perform any action that creates a potential hazard to people or makes the equipment unsafe.
- Do not wear loose clothing that may get caught in the appliance chassis.
- Wear safety glasses when working under conditions that may be hazardous to your eyes.

Safety with Electricity

Warning **This unit is intended for installation in restricted access areas. A restricted access area can be accessed only through the use of a special tool, lock and key, or other means of security.** Statement 1017

Warning **To avoid electric shock, do not connect safety extra-low voltage (SELV) circuits to telephone-network voltage (TNV) circuits. LAN ports contain SELV circuits, and WAN ports contain TNV circuits. Some LAN and WAN ports both use RJ-45 connectors.** Statement 1021

Warning **Do not touch the power supply when the power cord is connected. For systems with a power switch, line voltages are present within the power supply even when the power switch is off and the power cord is connected. For systems without a power switch, line voltages are present within the power supply when the power cord is connected.** Statement 4

Warning **Before working on equipment that is connected to power lines, remove jewelry (including rings, necklaces, and watches). Metal objects will heat up when connected to power and ground and can cause serious burns or weld the metal object to the terminals.** Statement 43

Warning **Before working on a chassis or working near power supplies, unplug the power cord on AC units; disconnect the power at the circuit breaker on DC units.** Statement 12

Warning **Do not work on the system or connect or disconnect cables during periods of lightning activity.** Statement 1001

Warning **This equipment is intended to be grounded. Ensure that the host is connected to earth ground during normal use.** Statement 39

Warning **When installing or replacing the unit, the ground connection must always be made first and disconnected last.** Statement 1046

Follow these guidelines when working on equipment powered by electricity:

- Locate the room's emergency power-off switch. Then, if an electrical accident occurs, you can quickly turn off the power.
- Disconnect all power before doing the following:
  - Working on or near power supplies
  - Installing or removing an appliance
  - Performing most hardware upgrades
- Never install equipment that appears damaged.
- Carefully examine your work area for possible hazards, such as moist floors, ungrounded power extension cables, and missing safety grounds.
- Never assume that power is disconnected from a circuit; *always* check.
- Never perform any action that creates a potential hazard to people or makes the equipment unsafe.
- Never work alone when potentially hazardous conditions exist.
- If an electrical accident occurs, proceed as follows:
  - Use caution, and do not become a victim yourself.
  - Turn off power to the appliance.

  - If possible, send another person to get medical aid. Otherwise, determine the condition of the victim, and then call for help.
  - Determine whether the person needs rescue breathing, external cardiac compressions, or other medical attention; then take appropriate action.

In addition, use the following guidelines when working with any equipment that is disconnected from a power source but still connected to telephone wiring or network cabling:

- Never install telephone wiring during a lightning storm.
- Never install telephone jacks in wet locations unless the jack is specifically designed for it.
- Never touch uninsulated telephone wires or terminals unless the telephone line is disconnected at the network interface.
- Use caution when installing or modifying telephone lines.

Preventing Electrostatic Discharge Damage

Electrostatic discharge (ESD) can damage equipment and impair electrical circuitry. ESD can occur when electronic printed circuit cards are improperly handled and can cause complete or intermittent failures. Always follow ESD-prevention procedures when removing and replacing modules:

- When unpacking a static-sensitive component from its shipping carton, do not remove the component from the antistatic packing material until you are ready to install the component in your appliance. Just before unwrapping the antistatic packaging, be sure to discharge static electricity from your body.
- When transporting a sensitive component, first place it in an antistatic container or packaging.
- Handle all sensitive components in a static-safe area. If possible, use antistatic floor pads and workbench pads.
- Ensure that the Cisco ADE 1010 and 2120 Series appliance is electrically connected to earth ground.
- Wear an ESD-preventive wrist strap, ensuring that it makes good skin contact. Connect the clip to an unpainted surface of the appliance to channel unwanted ESD voltages safely to ground. To guard against ESD damage and shocks, the wrist strap and cord must operate effectively.
- If no wrist strap is available, ground yourself by touching a metal part of the appliance.

Caution For the safety of your equipment, periodically check the resistance value of the antistatic wrist strap. It should be between 1 and 10 Mohm.

Lifting Guidelines

A Cisco ADE 1010 or 2120 Series appliance weighs between 15 lb (9.071 kg) and 33 lb (14.96 kg) depending on what hardware options are installed in the appliance. The appliance is not intended to be moved frequently. Before you install the appliance, ensure that your site is properly prepared so you can avoid having to move the appliance later to accommodate power sources and network connections.

Whenever you lift the appliance or any heavy object, follow these guidelines:

- Always disconnect all external cables before lifting or moving the appliance.
- Ensure that your footing is solid, and balance the weight of the object between your feet.
- Lift the appliance slowly; never move suddenly or twist your body as you lift.

- Keep your back straight and lift with your legs, not your back. If you must bend down to lift the appliance, bend at the knees, not at the waist, to reduce the strain on your lower back muscles.
- Lift the appliance from the bottom; grasp the underside of the appliance exterior with both hands.

Preparing Your Site for Installation

Before installing the Cisco ADE 1010 and 2120 Series appliance, it is important to prepare for installation by:

- Preparing the site (site planning) and reviewing the installation plans or method of procedures (MOPs)
- Unpacking and inspecting the appliance
- Gathering tools and test equipment required to properly install the appliance

Site Planning

Warning **This unit is intended for installation in restricted access areas. A restricted access area can be accessed only through the use of a special tool, lock and key, or other means of security.** Statement 1017

Typically, you should have prepared the installation site beforehand. As part of your preparation, obtain a floor plan of the site and the equipment rack where the Cisco ADE 1010 and 2120 Series appliance will be housed. Determine the location of any existing appliances and their interconnections, including communications and power. Following the airflow guidelines (see the "Airflow Guidelines" section on page 2-9) ensures that adequate cooling air is provided to the appliance.

All personnel involved in the installation of the appliance including installers, engineers, and supervisors should participate in the preparation of a MOP for approval by the customer. (See the "Method of Procedure" section on page 2-10.)

The following sections provide the site requirement guidelines that you must consider before installing the appliance:

- Rack Installation Safety Guidelines, page 2-6
- Site Environment, page 2-8
- Airflow Guidelines, page 2-9
- Temperature and Humidity Guidelines, page 2-9
- Power Considerations, page 2-9
- Method of Procedure, page 2-10

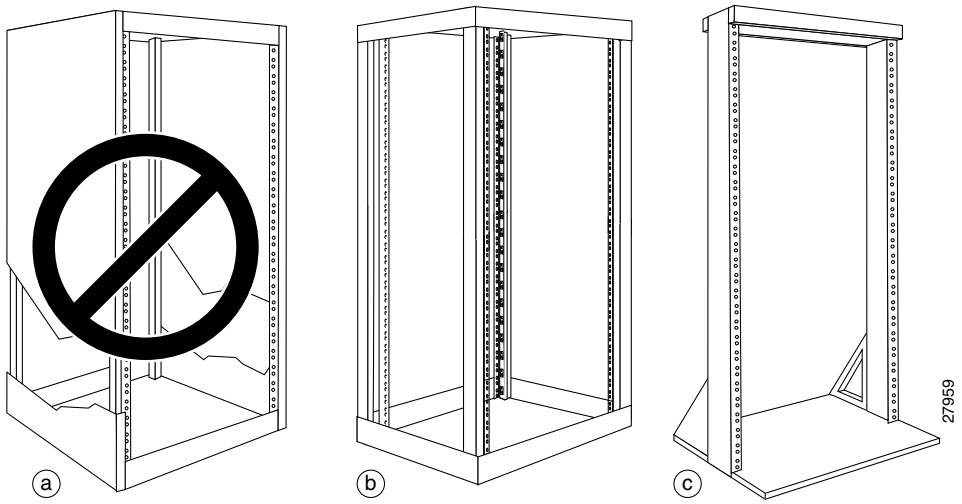
Rack Installation Safety Guidelines

The Cisco ADE 1010 and 2120 Series appliance can be mounted in most 2-post, 4-post, or telco-type 19-inch equipment racks that comply with the Electronics Industries Association (EIA) standard for equipment racks (EIA-310-D). The rack must have at least two posts with mounting flanges to mount

the appliance. The distance between the center lines of the mounting holes on the two mounting posts must be 18.31 inches +/- 0.06 inch (46.50 cm +/- 0.15 cm). The rack-mounting hardware included with the appliance is suitable for most 19-inch equipment racks or telco-type frames.

Figure 2-1 shows examples of 4-post and 2-post (telco-type) equipment racks, respectively.

Figure 2-1 Equipment Rack Types



Enclosed Rack (Do Not Use)

Figure 2-1a shows a freestanding, enclosed rack with two mounting posts in the front. The Cisco ADE 1010 and 2120 Series appliance should *not* be installed in this type of enclosed rack, because the appliance requires an unobstructed flow of cooling air to maintain acceptable operating temperatures for its internal components. Installing the appliance in any type of enclosed rack—*even with the front and back doors removed*—could disrupt the airflow, trap heat next to the appliance, and cause an overtemperature condition inside the appliance.

4-Post (Open) Rack

Figure 2-1b shows a freestanding, 4-post open rack with two mounting posts in front and two mounting posts in back. The mounting posts in this type of rack are often adjustable so that you can position the rack-mounted unit within the depth of the rack rather than flush-mount it with the front of the rack.

2-Post (Telco) Rack

Figure 2-1c shows a 2-post (telco-type) rack. This rack is an open frame consisting of two posts tied together by a crossbar at the top and a floor stand at the bottom.

This type of rack is usually secured to the floor and sometimes to an overhead structure or wall for additional stability. The Cisco ADE 1010 or 2120 Series appliance can be installed in this rack either in a front-mounted position or a center-mounted position.

- In the front-mounted position, you secure the appliance rack-mounting brackets directly to the rack posts.

- In the center-mounted position, you secure a set of optional center-mount brackets to the rack posts. The appliance rack-mounting flanges are then secured to the center-mount brackets. The center-mounted position moves the center of gravity closer to the appliance and closer to the vertical axis of the rack posts, which adds to the stability of the rack installation.

Before installing your Cisco ADE 1010 and 2120 Series appliance in a rack, review the following guidelines:

- Two or more people are required to install the appliance in a rack.
- Ensure that the room air temperature is below 95°F (35°C).
- Do not block any air vents; usually 6 inches (15 cm) of space provides proper airflow.
- Plan the appliance installation starting from the bottom of the rack.
- Do not extend more than one appliance out of the rack at the same time.
- Connect the appliance to a properly grounded outlet.
- Do not overload the power outlet when installing multiple devices in the rack.
- Do not place any object weighing more than 110 lb (50 kg) on top of rack-mounted devices.

Site Environment

The location of your appliance and the layout of your equipment rack or wiring room are extremely important considerations for proper operation. Equipment placed too close together, inadequate ventilation, and inaccessible panels can cause malfunctions and shutdowns, and can make maintenance difficult. Plan for access to front and rear panels of the appliance.

The following precautions will help you plan an acceptable operating environment for your appliance and will help you avoid environmentally caused equipment failures:

- Ensure that the room where your appliance operates has adequate circulation. Electrical equipment generates heat. Without adequate circulation, ambient air temperature may not cool equipment to acceptable operating temperatures (see the "Airflow Guidelines" section on page 2-9).
- Ensure the site of the rack includes provisions for source AC power, grounding, and network cables.
- Allow sufficient space to work around the rack during the installation. You need:
  - At least 3 feet (9.14 m) adjacent to the rack to move, align, and insert the appliance.
  - At least 24 inches (61 cm) of clearance in front of and behind the appliance for maintenance after installation.
- To mount the appliance between two posts or rails, the usable aperture (the width between the *inner* edges of the two mounting flanges) must be at least 17.7 inches (45.0 cm).
- If you use a 2-post (telco-type) rack, the weight of several appliances is cantilevered off of the two rack posts. Make sure that:
  - The weight of several appliances does not make the frame unstable.
  - The frame is bolted to the floor and is secured to the building structure using either wall brackets or overhead brackets.
- Use appropriate strain-relief methods to protect cables and equipment connections.
- To avoid noise interference in network interface cables, do not route them directly across or along power cables.

- Always follow ESD-prevention procedures as described in the "Preventing Electrostatic Discharge Damage" section on page 2-5 to avoid damage to equipment. Damage from static discharge can cause immediate or intermittent equipment failure.

Airflow Guidelines

To ensure adequate airflow through the equipment rack, it is recommended that you maintain a clearance of at least 6 inches (15.24 cm) at the front and the rear of the rack.

If airflow through the equipment rack and the appliances that occupy it is blocked or restricted, or if the ambient air being drawn into the rack is too warm, an overtemperature condition within the rack and the appliances that occupy it can occur.

The site should also be as dust-free as possible. Dust tends to clog the appliance fans, reducing the flow of cooling air through the equipment rack and the appliances that occupy it. This reduction increases the risk of an overtemperature condition.

Additionally, the following guidelines will help you plan your equipment rack configuration:

- Besides airflow, you must allow clearance around the rack for maintenance.
- When mounting an appliance at an open rack, ensure that the rack frame does not block the front intakes or the rear exhausts.

Temperature and Humidity Guidelines

Table 2-1 lists the operating and nonoperating environmental site requirements for the Cisco ADE 1010 and 2120 Series appliance. The appliance normally operates within the ranges listed; however, a temperature measurement approaching a minimum or maximum parameter indicates a potential problem. Maintain normal operation by anticipating and correcting environmental anomalies before they approach critical values by properly planning and preparing your site before you install the appliance.

Table 2-1 Operating and Nonoperating Environmental Specifications

Specification	Minimum	Maximum
Temperature, ambient operating	50°F (10°C)	95°F (35°C)
Temperature, ambient nonoperating and storage	-40°F (°C)	158°F (70°C)
Humidity, ambient (noncondensing) operating	10%	90%
Humidity, ambient (noncondensing) nonoperating and storage	5%	95%
Vibration, operating	5–500 Hz, 2.20 g RMS random	—

Power Considerations

You configure the Cisco ADE 1010 and 2120 Series appliance with AC-input power only. Ensure all power connections conform to the rules and regulations in the National Electrical Codes (NECs), as well as local codes. Follow these precautions and recommendations when planning power connections to your appliance:

- Check the power at your site before installation and periodically after installation to ensure that you are receiving clean power (free of spikes and noise). Install a power conditioner if necessary.
- The AC power supply includes the following features:

  - Autoselects either 110-V or 220-V operation.
  - All appliances include an electrical cord. (A label near the power cord indicates the correct voltage, frequency, current draw, and power dissipation for the appliance.)

Warning **This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that a fuse or circuit breaker no larger than 120 VAC, 15A U.S. (240 VAC, 10A international) is used on the phase conductors (all current-carrying conductors).** Statement 13

- Install proper grounding to your host equipment rack to avoid damage from lightning and power surges.

Warning **This equipment must be grounded. Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available.** Statement 1024

- The AC-input power supply operates on input voltage and frequency within the ranges of 100 to 240 VRMS and 50/60 Hz without the need for operator adjustments.

Method of Procedure

As described previously, part of your preparation includes reviewing installation plans or MOPs. An example of a MOP (a preinstallation checklist of tasks and considerations that need to be addressed and agreed upon before proceeding with the installation) is as follows:

1. Assign personnel.
2. Determine protection requirements for personnel, equipment, and tools.
3. Evaluate potential hazards that may affect service.
4. Schedule time for installation.
5. Determine any space requirements.
6. Determine any power requirements.
7. Identify any required procedures or tests.
8. On an equipment plan, make a preliminary decision that locates each Cisco ADE 1010 and 2120 Series appliance that you plan to install.
9. Read this hardware installation guide.
10. Verify the list of replaceable parts for installation (screws, bolts, washers, and so on) so that the parts are identified.
11. Check the required tools list to make sure the necessary tools and test equipment are available. (See the "Required Tools and Equipment" section on page 2-13.)
12. Perform the installation.

Unpacking and Checking the Contents of Your Shipment

The shipping package for the Cisco ADE 1010 and 2120 Series appliance is designed to reduce the possibility of product damage associated with routine material handling experienced during shipment. To reduce the potential damage to the product, transport the appliance in its original Cisco packaging. Failure to do so may result in damage to the appliance. Also, do not remove the appliance from its shipping container until you are ready to install it.

The appliance, cables, and any optional equipment you ordered may be shipped in more than one container. When you unpack the containers, check the packing list to ensure that you received all the parts listed in Table 2-2. A *Notes* section has been provided to record damaged or missing items.

Note Do not discard the packaging materials used in shipping your Cisco ADE 1010 and 2120 Series appliance. You will need the packaging materials in the future if you move or ship your appliance.

Table 2-2 Cisco ADE 1010 or 2120 Series Appliance Packing List

✓	Item	Cisco Part Number
❑	Cisco Application Deployment Engine (ADE) 1010 Series Appliance	CADE-1010-K9
❑	Cisco Application Deployment Engine (ADE) 2120 Series Appliance	CADE-2120-K9
❑	2-post Rack-mount kit (For kit contents, see the "2-Post Rack-Mount Hardware Kit" section on page 3-3.)	CADE-1U-BRACKETS
❑	4-post Server Rack-mount kit (For kit contents, see the "4-Post Rack-Mount Hardware Kit" section on page 3-17.)	CADE-1U-RAILS
❑	*Cisco Information Packet*	78-5235-03D0
❑	Cisco 90-Day Limited Hardware Warranty Terms	78-5236-01C0
❑	*Regulatory Compliance and Safety Information for the Cisco Application Deployment Engine (ADE) 1010 and 2120 Series Appliance*	78-18072-xx
❑	*Cisco Application Deployment Engine (ADE) 1010 and 2120 Series Appliance Hardware Installation Guide*	78-18578-xx
Notes		

Inspect all items for shipping damage. If anything appears to be damaged, or if you encounter problems installing or configuring your appliance, contact your customer service representative.

Cisco Information Packet and Warranty

The *Cisco Information Packet* provides warranty, service, and support information.

To access and download the *Cisco Information Packet* and your warranty and license agreements from Cisco.com:

Step 1 Launch your Internet browser, then go to this URL:

http://www.cisco.com/univercd/cc/td/doc/es_inpck/cetrans.htm

The Warranties and License Agreements page appears.

Step 2 To read the *Cisco Information Packet*:

a. Click the **Information Packet Number** field, and make sure the part number 78-5235-03D0 is highlighted.

b. Select the language in which you would like to read the document.

c. Click **Go**.

The Cisco Limited Warranty and software License page from the Information Packet appears.

d. Read the document online, or click the **PDF** icon to download and print the document.

Note You must have Adobe Acrobat Reader to view and print PDF files. You can download the reader from the Adobe website at: http://www.adobe.com

Step 3 To read translated and localized warranty information about your product:

a. Enter this part number in the Warranty Document Number field:

78-5236-01C0

b. Select the language in which you would like to read the document.

c. Click **Go**.

The Cisco warranty page appears.

d. Review the document online, or click the **PDF** icon to download and print the document in PDF.

Step 4 You can also contact the Cisco Service and Support website for assistance at:

http://www.cisco.com/en/US/support/

Duration of Hardware Warranty

Ninety (90) days.

Replacement, Repair, or Refund Policy for Hardware

Cisco or its service center will use commercially reasonable efforts to ship a replacement part within ten (10) working days after receipt of the Return Materials Authorization (RMA) request. Actual delivery times can vary depending on the customer location.

Cisco reserves the right to refund the purchase price as its exclusive warranty remedy.

To Receive a Return Materials Authorization (RMA) Number

Contact the company from whom you purchased the product. If you purchased the product directly from Cisco, contact your Cisco Sales and Service Representative.

Complete the information below, and keep it for reference:

Company product purchased from	
Company telephone number and website location	
Product model number	
Product serial number[1]	
Maintenance contact number	

1. See the "Product Serial Number Location" section on page 1-3 and the "Product Serial Number Location" section on page A-7 for more information.

Required Tools and Equipment

Caution The fastener pack, within the rack-mount kit, contains eight rack screws. You must check these screws to ensure that they are the appropriate size for the holes in your rack. Using the wrong-sized screws for your threaded rack holes can damage the rack.

You need the following tools and equipment to install the Cisco ADE 1010 and 2120 Series appliance in a 2- or 4-post rack:

Warning **Only trained and qualified personnel should be allowed to install, replace, or service this equipment.** Statement 1030

- ESD-preventive cord and wrist strap.
- Number 2 Phillips screwdriver.
- Flat-blade screwdrivers: small, 3/16-inch (0.476 cm) and medium, 1/4-inch (0.625 cm).
  - To remove the cover, if you are upgrading memory or other components
- Rack-Mount Kit (For kit contents, see the "2-Post Rack-Mount Hardware Kit" section on page 3-3 or "4-Post Rack-Mount Hardware Kit" section on page 3-17.)
- Cables for connection to the LAN ports (depending on the configuration).
- Ethernet hub or PC with a network interface card for connection to the Ethernet (LAN) port or ports.
- Console terminal (an ASCII terminal or a PC running terminal-emulation software) that is configured for 9600 baud, 8 data bits, no parity, 1 stop bit, and no hardware flow control.
- Console cable for connection to the serial (console) port. A null-modem cable is recommended.

Installation Checklist

To assist you with your installation and to provide a historical record of what was done, and by whom, use the following Installation Checklist. Make a copy of this checklist and mark the entries as you complete each task. When the checklist is completed, include a copy of the checklist for each Cisco ADE 1010 and 2120 Series appliance in your Site Log (see the "Creating a Site Log" section on page 2-14 for information about creating a Site Log) along with other records for your new appliance.

Installation Checklist for Site:
Cisco Application Deployment Engine 1010 or 2120 Series Appliance Name:

Task	Verified by	Date
Installation Checklist copied		
Background information placed in Site Log		
Site power voltages verified		
Installation site power check completed		
Required tools available		
Additional equipment available		
ADE 1010 or 2120 Series appliance received		
Cisco Information Packet publication received		
Appliance components verified		
Initial electrical connections established		
ASCII terminal (for local configuration)		
Signal distance limits verified		
Startup sequence steps completed		
Initial operation verified		

Creating a Site Log

The Site Log (see Appendix B, "Site Log," for a sample Site Log) provides a record of all actions related to installing and maintaining the Cisco ADE 1010 and 2120 Series appliance. Keep the log in an accessible place near the appliance so that anyone who performs tasks has access to it. Use the Installation Checklist (see the previous section, "Installation Checklist") to verify the steps in the installation and maintenance of your appliance. Site Log entries might include the following:

- Installation progress—Make a copy of the appliance Installation Checklist, and insert it into the Site Log. Make entries as you complete each task.
- Upgrade, removal, and maintenance procedures—Use the Site Log as a record of ongoing appliance maintenance and expansion history. Each time a task is performed on the appliance, update the Site Log to reflect the following information:
  - Installation of new adapter cards
  - Removal or replacement of adapter cards and other upgrades
  - Configuration changes

- Maintenance schedules and requirements
- Maintenance procedures performed
- Intermittent problems
- Comments and notes

Ethernet and Console Port Considerations

There are two network interface connectors (NIC 1 and NIC 2) on the rear panel of the Cisco ADE 1010 and 2120 Series appliance. Both ports use unshielded twisted-pair (UTP) cable. Cisco recommends Category 5 UTP cable. The maximum segment distance is 328 feet (100 meters). The UTP cables look like the cables used for ordinary telephones; however, UTP cables meet certain electrical standards that telephone cables do not. Cables are not included.

The appliance includes an asynchronous serial console port, which provides access to the appliance locally (using a console terminal). This section describes important cabling information to consider before connecting a console terminal—either an ASCII terminal or a PC running terminal-emulation software—to the console port.

Note The console cable is not included with the Cisco ADE 1010 and 2120 Series appliance.

NIC 1 and NIC 2 (RJ-45) Ethernet Connections

The NIC 1 and NIC 2 connections support 10BASE-T, 100BASE-TX, and 1000BASE-T standards. The transmission speed of the Ethernet ports is autosensing by default and is user configurable.

Figure 1-6 on page 1-9 shows the pin orientation of the RJ-45 Ethernet port and the modular cable plug it accepts.

Console Port Connections

The console port on the Cisco ADE 1010 and 2120 Series appliance includes an EIA/TIA-232 asynchronous serial (DB-9) connector. This serial console connector (port) allows you the capability to access the appliance locally by connecting a terminal—either a PC running terminal-emulation software or an ASCII terminal—to the console port.

To connect a PC running terminal-emulation software to the console port, use a DB-9 female to DB-9 female null-modem cable.

To connect an ASCII terminal to the console port, use a DB-9 female to DB-25 male straight-through cable with a DB-25 female to DB-25 female gender changer. The default parameters for the console port are 9600 baud, 8 data bits, no parity, 1 stop bit, and no hardware flow control.

CHAPTER 3

Installing the Cisco ADE 1010 and 2120 Series Appliance

This chapter describes how to install your Cisco ADE 1010 and 2120 Series appliance and how to connect it to the network.

This chapter contains the following sections:

- Rack-Mounting Configuration Guidelines, page 3-2
- Mounting the Cisco ADE 1010 and 2120 Series Appliance in a 2-Post Rack, page 3-4
- Mounting the Cisco ADE 1010 and 2120 Series Appliance in a 4-Post Rack, page 3-16
- Connecting Cables, page 3-22
- Powering Up the Cisco ADE 1010 and 2120 Series Appliance, page 3-24
- Removing or Replacing the Cisco ADE 1010 and 2120 Series Appliance, page 3-26

Before you begin the installation, read the *Regulatory Compliance and Safety Information for the Cisco Application Deployment Engine (ADE) 1010 and 2120 Series Appliance* document and the *Site Preparation and Safety Guide* that shipped with your appliance.

Warning **Only trained and qualified personnel should be allowed to install, replace, or service this equipment.** Statement 1030

Warning **This unit is intended for installation in restricted access areas. A restricted access area can be accessed only through the use of a special tool, lock and key, or other means of security.** Statement 1017

Rack-Mounting Configuration Guidelines

Each Cisco ADE 1010 and 2120 Series appliance has a set of rack handles (installed at the factory). These handles will have to be used later when you install the appliance in a 4-post rack. You can front (flush) mount or mid-mount the appliance in a 19-inch (48.3-cm) equipment rack that conforms to the 2- and 4-post rack specification (the inside width of the rack should be 17.5 inches [44.45 cm]). Mount the appliance to the brackets as described in the "Attaching the Rack-Mounting Brackets to the Appliance" section on page 3-6. When installed in the rack, the appliance requires one EIA 1.75-inch (4.4-cm) vertical mounting space or 1 rack unit (RU) for mounting. (See the "Mounting the Cisco ADE 1010 and 2120 Series Appliance in a 2-Post Rack" section on page 3-4.)

Caution Clearance in the front and rear of the Cisco ADE 1010 and 2120 Series appliance must be allowed for cooling air to be drawn in through the front and circulated through the appliance and out the rear of the appliance.

The "Rack Installation Safety Guidelines" section on page 2-6 and the following information will help you plan your equipment rack configuration:

- When mounting the appliance to an equipment rack, ensure that the rack is bolted to the floor.
- Because you will probably be installing more than one appliance into the rack, ensure that the weight of all the appliances installed does not make the rack unstable.

Caution Some equipment racks are also secured to ceiling brackets, if necessary, due to the weight of the equipment in the rack. Make sure that the rack you are using to install the appliances is secured to the building structure.

- As mentioned in the "Airflow Guidelines" section on page 2-9, maintain a 6-inch (15.2-cm) clearance at the front and rear of the appliance to ensure adequate air intake and exhaust.
- Avoid installing the appliances in an overly congested rack. Air flowing to or from other appliances in the rack might interfere with the normal flow of cooling air through the appliances, increasing the potential for overtemperature conditions within the appliances. (See the "Overtemperature Protection (OTP)" section on page 1-11 for more information about overtemperature conditions.)
- Allow at least 24 inches (61 cm) of clearance at the front and rear of the rack for appliance maintenance.

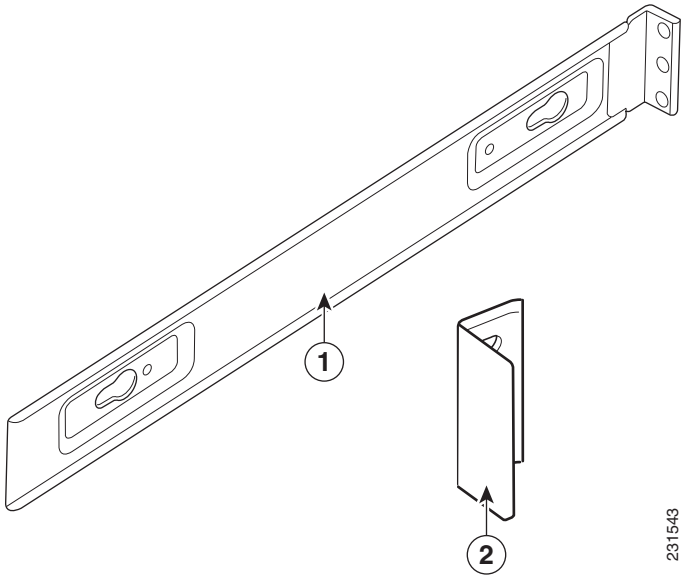
Caution To prevent appliance overheating, never install the appliance in an enclosed rack or room that is not properly ventilated or air conditioned.

- Follow your local practices for cable management. Ensure that cables to and from the appliances do not impede access to perform equipment maintenance or upgrades.

2-Post Rack-Mount Hardware Kit

Figure 3-1 shows the brackets that you need to install the Cisco ADE 1010 and 2120 Series appliance in a 2-post rack. Table 3-1 on page 3-4 describes the contents of the rack-mount hardware kit, Cisco part number CADE-1U-BRACKETS.

Figure 3-1 Rack-Mount Brackets



1	Appliance bracket (2)	**2**	L bracket (2)

Note Besides the above items, the rack-mount kit includes rear brackets (2) and a fastener pack (see Figure 3-2 and Table 3-1 on page 3-4).

Figure 3-2 Fastener Pack

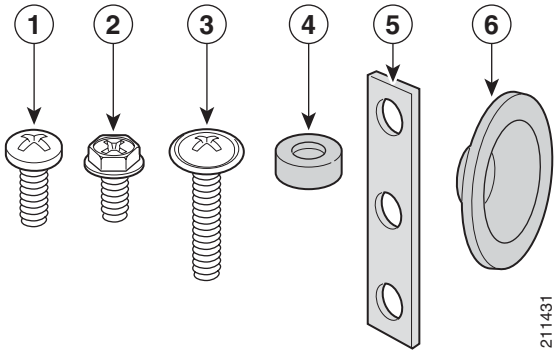


Table 3-1 Fastener Pack

Item #	Description	Quantity
1	Rack screw, 10-32 x 1/2-inch (1.27 cm)	8
2	Screw, hex head	4
3	Screw, 10-32 x 7/8-inch (2.22 cm)	2
4	Handle spacers	2
5	Nut bar	4
6	Appliance disks	2

Mounting the Cisco ADE 1010 and 2120 Series Appliance in a 2-Post Rack

Warning **When the appliance is installed in a rack and is fully extended on its slide rail, it is possible for the rack to become unstable and tip over, which could cause serious injury. To eliminate the risk of rack instability from extending the rail or in the event of an earthquake, you should affix the rack to the floor.**

Typically, the Cisco ADE 1010 and 2120 Series appliance mounts to a 19-inch (48.3-cm) 2-post equipment rack with rack-mounting brackets that attach to the front sides of the appliance. The inside width between the two posts or mounting strips (left and right) must be at least 17.5 inches (44.45 cm). See the "Product Overview" section on page 1-2 for information about the equipment rack.

Even though the intake and exhaust for cooling air are located on the front and on the rear of the appliance, respectively, it is recommended that multiple appliances be stacked in a rack with at least a 1.5-inch (3.81-cm) vertical clearance.

To secure the appliance to the equipment rack, you must use the four mounting screws (provided) for each side or follow your local practices for installing the appliance into your equipment rack. Ensure that the rack-mount brackets have been securely fastened. See the "Attaching the Rack-Mounting Brackets to the Appliance" section on page 3-6 for more information.

The following procedure provides a general outline for mounting the appliance into the equipment rack.

Caution To prevent injury, review the "Safety Guidelines" section on page 2-2 and the "Rack-Mounting Configuration Guidelines" section on page 3-2 before installing the appliance in the equipment rack.

Step 1 Locate the equipment rack position you plan to install the appliance into.

Step 2 Verify that there are no obstructions and ensure that the equipment rack is stabilized.

Step 3 Position the appliance in the equipment rack, lining up the bracket holes on the appliance with the holes on the rack, and secure it with four 10-32 x 1/2-inch rack screws (each side). You need two people to install the appliance in the rack—one person to hold the appliance and one person to secure it to the rack.

Note The vertical spacing for the equipment rack is at least 1.75 inches (4.44 cm), with mounting holes spaced 1.5 inches (3.81 cm) apart.

Step 4 Tighten the screws using a Number 2 Phillips screwdriver (each side).

Mid-Mounting in a 2-Post Rack

This section contains the following topics:

- Removing the Front Bezel and Appliance Handles, page 3-5
- Attaching the Rack-Mounting Brackets to the Appliance, page 3-6
- Attaching the L Brackets to the Center Posts, page 3-8
- Installing the Appliance in the Rack, page 3-8

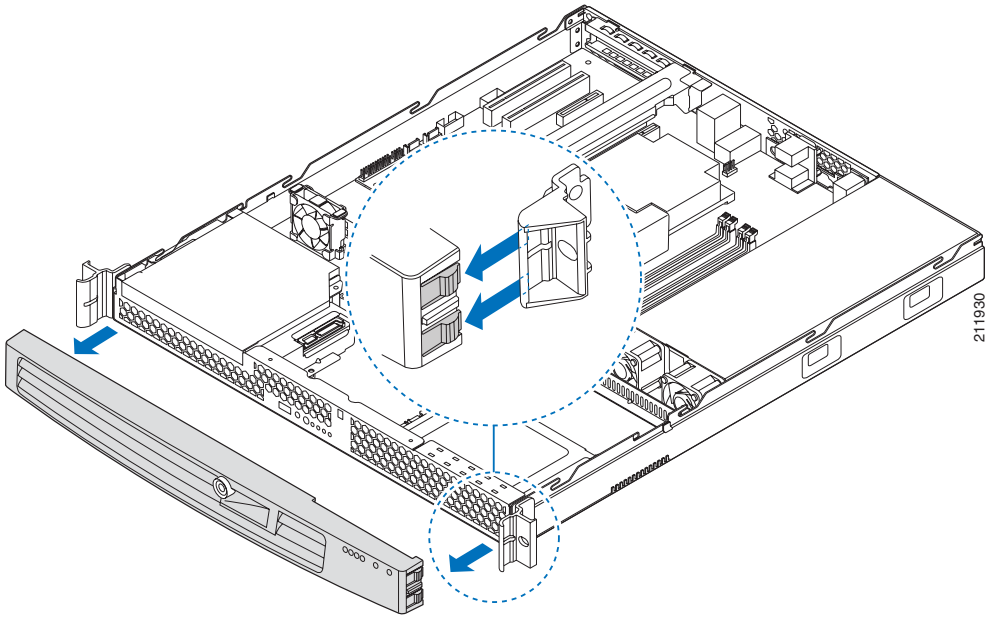
Removing the Front Bezel and Appliance Handles

Note The following procedure assumes that your Cisco ADE 1010 and 2120 Series appliance came shipped with the front bezel and handles installed.

You must remove the front bezel to access the DVD-ROM and the power button. The bezel does not lock.

Step 1 To remove the bezel, pull the bezel from the appliance. (See Figure 3-3.)

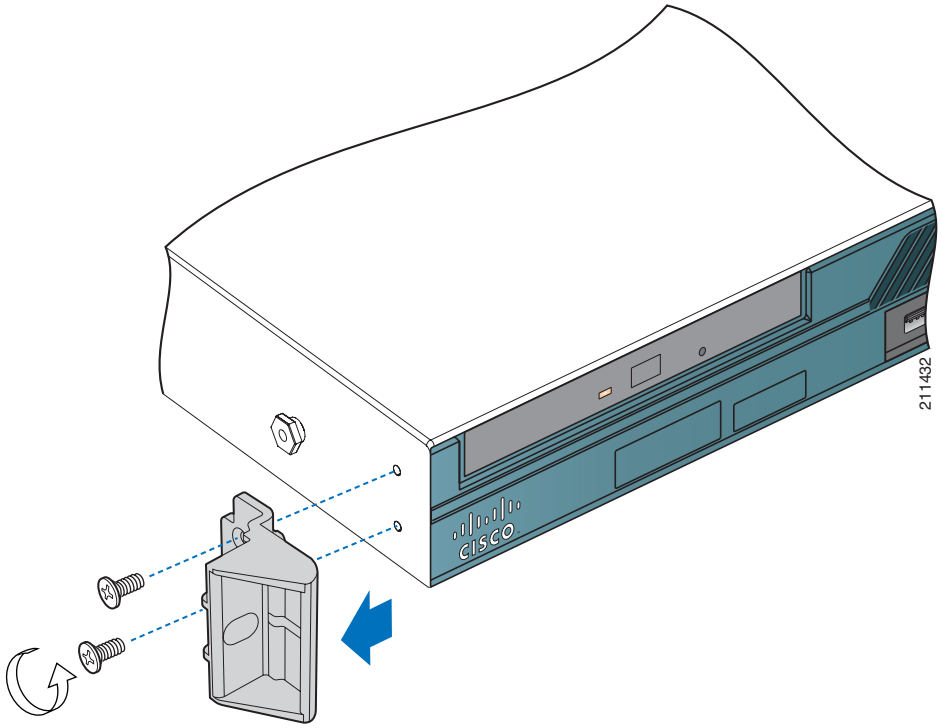
Figure 3-3 Removing the Front Bezel from the Appliance



Step 2 To replace the bezel, line up the center notch on the bezel with the center guide on the appliance handles, then push the bezel onto the front of the appliance until it clicks into place.

Step 3 Remove the appliance handles by removing the two screws (see Figure 3-4) from each handle.

Figure 3-4 Removing the Handles from the Appliance



Step 4 Replace the screws to keep the bezel attached to the appliance.

Proceed to the next section, "Attaching the Rack-Mounting Brackets to the Appliance," to continue the installation.

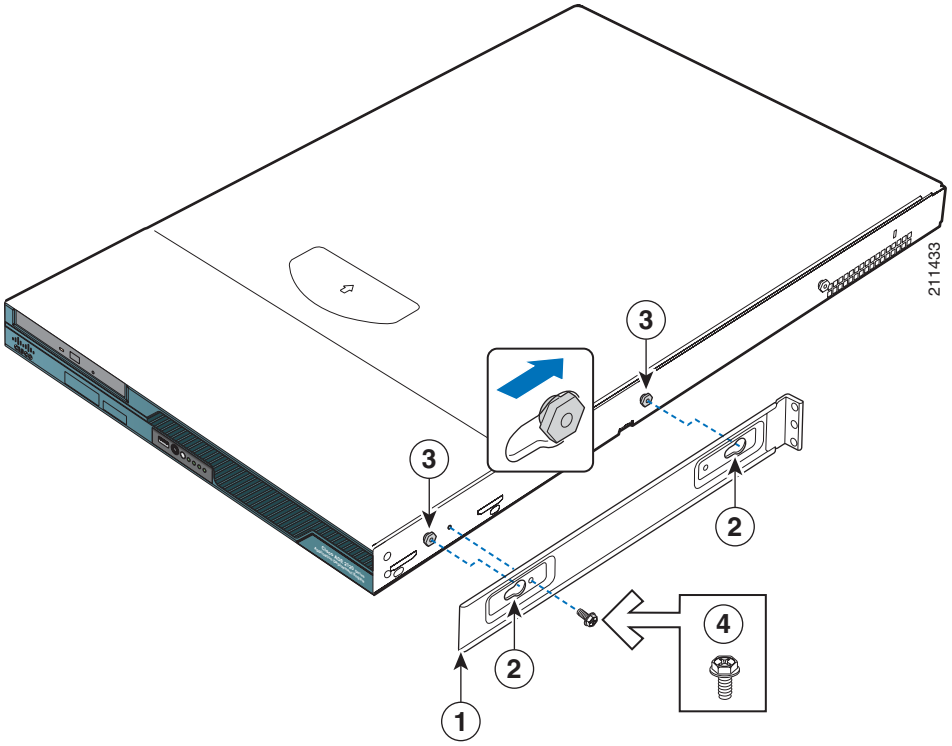
Attaching the Rack-Mounting Brackets to the Appliance

Before you begin, check the 10-32 x 1/2-inch screws that are included in the fastener pack (see Figure 3-2 on page 3-3) to see if they are the correct size for your rack. If not, obtain the correct screws to use in the procedure where "rack screws" are required.

To attach the brackets to the appliance:

Step 1 Place a mounting bracket (see location 1 in Figure 3-5 on page 3-7) along one side of the appliance in the mid-mount position.

Figure 3-5 Attaching the Bracket



1	Mounting bracket	**3**	Appliance tabs
2	Mounting bracket holes	**4**	Hex head screws

Step 2 Align the holes (see location 2 in Figure 3-5) in the bracket with the tabs (see location 3 in Figure 3-5) on the appliance and place the bracket against the appliance.

Step 3 Slide the bracket as far as it will go toward the front of the appliance.

Step 4 Insert the hex head screws (see location 4 in Figure 3-5) and fasten the bracket to the appliance using a Number 2 Phillips screwdriver.

Step 5 Repeat Steps 2 through 4 for the other rack-mounting bracket.

Step 6 You are now ready to install the appliance into the 2-post rack.

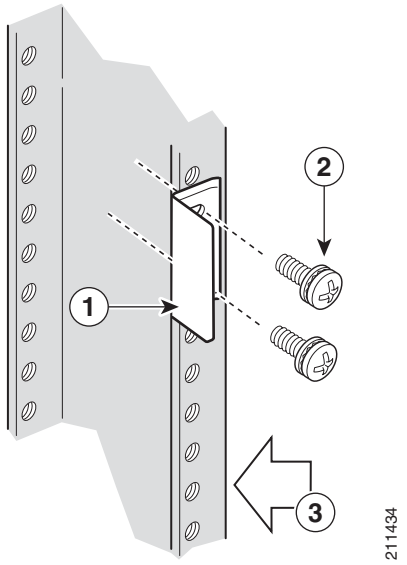
Proceed to the next section, "Attaching the L Brackets to the Center Posts," to continue the installation.

Attaching the L Brackets to the Center Posts

To attach the L brackets to the center posts:

Step 1 Position an L bracket (see location 1 in Figure 3-6) on the front side of the center post (see location 3 in Figure 3-6).

Figure 3-6 Attaching an L Bracket to a Center Post



1	L bracket	**3**	Front side of right center post
2	Rack screw		

Step 2 Attach the L bracket to the center post using the rack screws (see location 2 in Figure 3-6). Do not fully tighten the screws at this time.

Step 3 Repeat Steps 1 and 2 for the other L bracket.

Proceed to the next section, "Installing the Appliance in the Rack," to continue the installation.

Installing the Appliance in the Rack

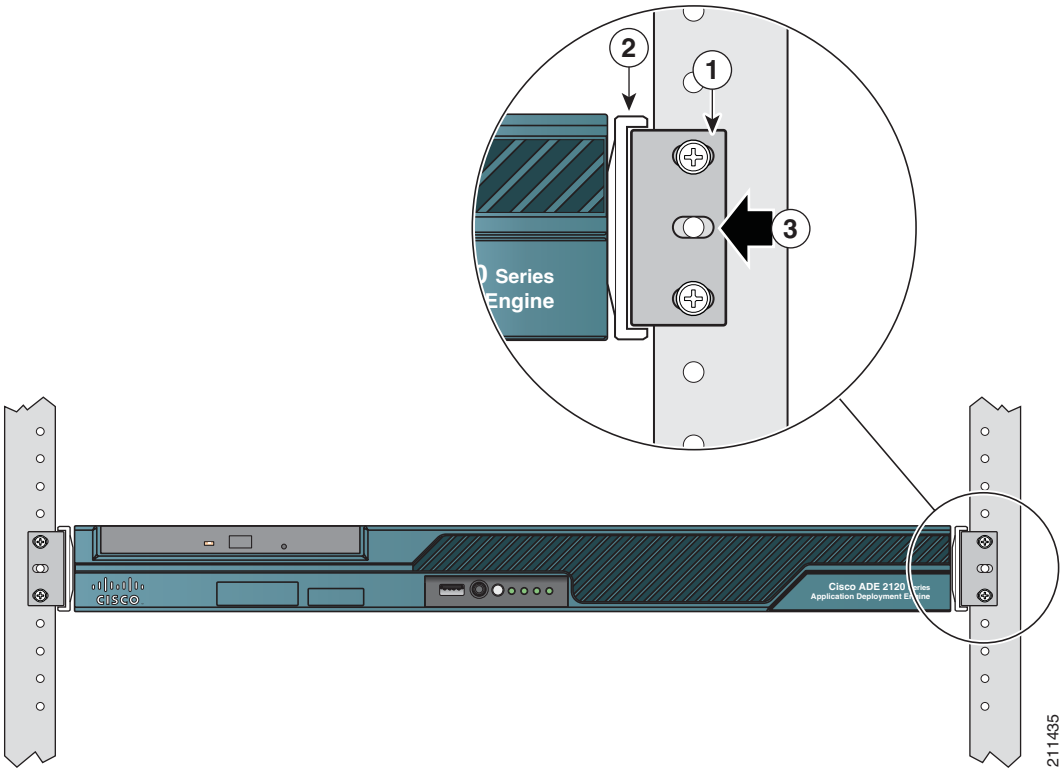
Caution Lifting the appliance and attaching it to the rack is a two-person job. If needed, use an appropriate lifting device. A fully loaded Cisco ADE 1010 and 2120 Series appliance weighs approximately 33 lb (14.96 kg).

To mount the appliance in the rack:

Step 1 Locate one person at the front of the rack and one at the rear.

Step 2 Position the appliance so that the L brackets (see location 1 in Figure 3-7) are inserted into the appliance mounting brackets (see location 2 in Figure 3-7).

Figure 3-7 L Brackets Inserted into Appliance Mounting Brackets (Front View)



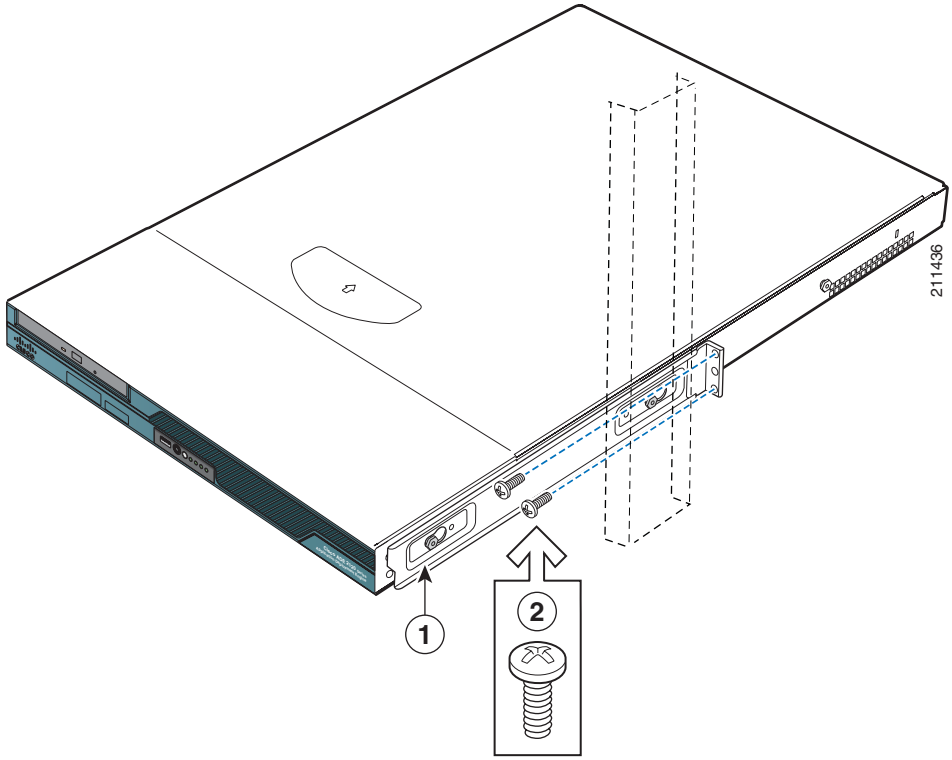
1	L brackets	**3**	Adjusting the L brackets
2	Appliance mounting brackets		

Step 3 While one person supports the weight of the appliance, the other person must adjust the L brackets to fit tightly into the appliance brackets (see location 3 in Figure 3-7).

Step 4 Slide the appliance toward the front of the rack until the front of the appliance mounting brackets contact the rear of the center posts.

Step 5 Using the rack screws, attach the front of the mounting brackets to the front of the center posts. (See Figure 3-8 on page 3-10.)

Figure 3-8 Installing the Appliance in the Rack



1	Appliance mounting bracket in mid-mount position	**2**	Rack screws

Step 6 Tighten all screws.

Front-Mounting in a 2-Post Rack

Warning **The rack mount kit for the Cisco ADE 1010 and 2120 Series appliance provides the option for mounting the system in a two post front-mount-only configuration. However, this option is not recommended for use in most rack systems. If you wish to use a front-mount-only configuration, it is strongly recommended that you verify with your rack vendor that your specific rack is designed to support the excessive weight and stresses that this mounting configuration imposes on the rack. If the rack is not designed for this type of load, you may experience structural failure of the rack. Rather, you should use a 2-post mid-mount or 4-post configuration, when possible.**

This section contains the following topics:

- Removing the Front Bezel and Appliance Handles, page 3-11
- Attaching the Rack-Mounting Brackets to the Appliance, page 3-12

- Attaching the L Brackets to the Rack Posts, page 3-14
- Installing the Appliance in the Rack, page 3-14

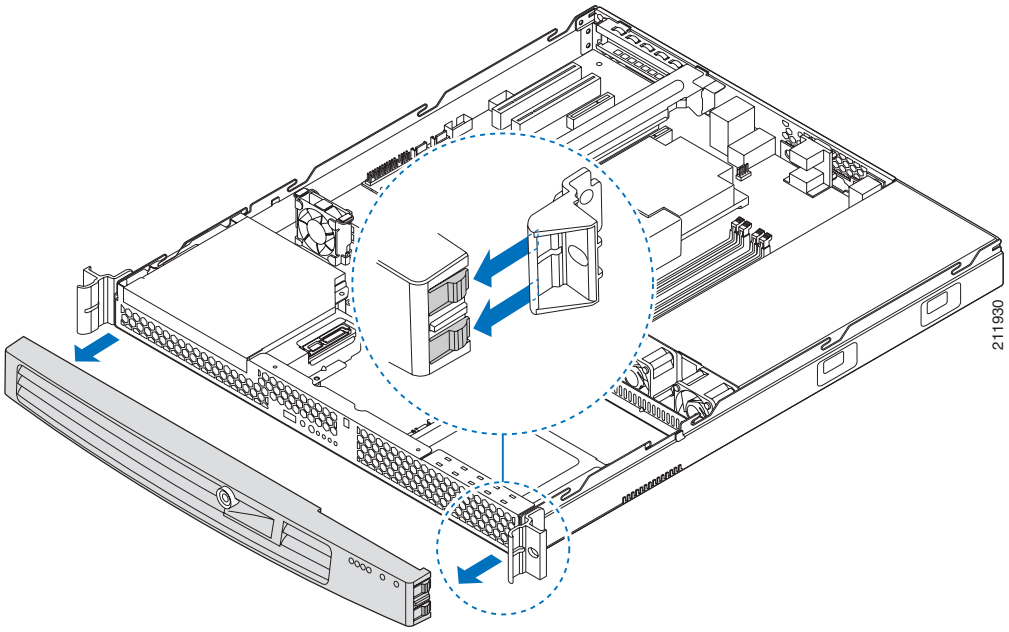
Removing the Front Bezel and Appliance Handles

Note The following procedure assumes that your Cisco ADE 1010 and 2120 Series appliance came shipped with the front bezel and handles installed.

You must remove the front bezel to access the DVD-ROM and the power button. The bezel does not lock.

Step 1 To remove the bezel, pull the bezel from the appliance. (See Figure 3-9.)

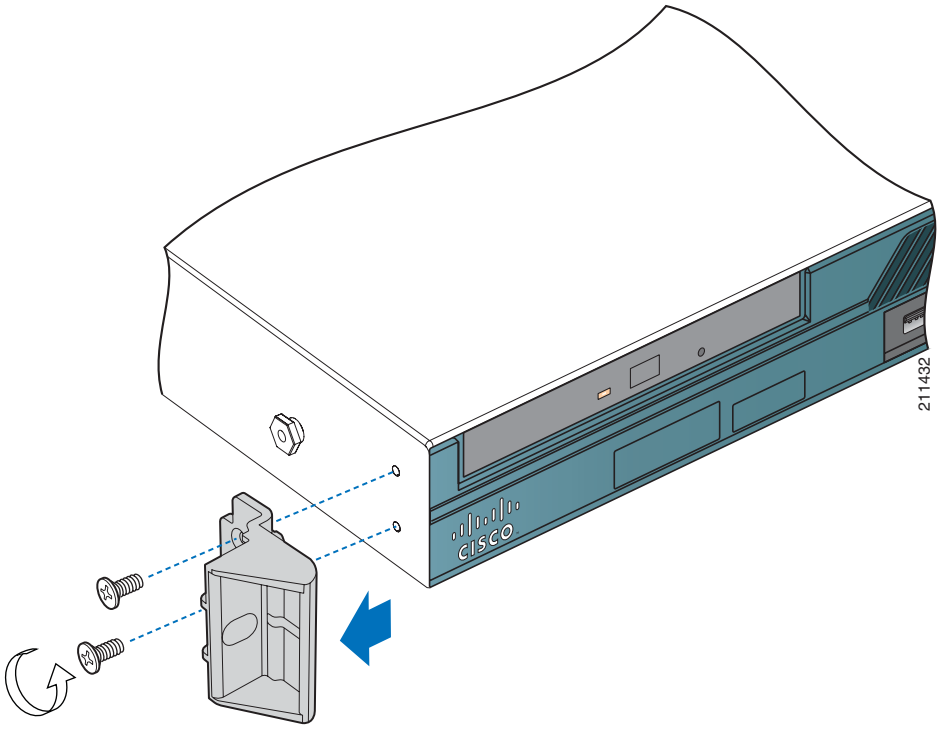
Figure 3-9 Removing the Front Bezel from the Appliance



Step 2 To replace the bezel, line up the center notch on the bezel with the center guide on the appliance handles, then push the bezel onto the front of the appliance until it clicks into place.

Step 3 Remove the appliance handles by removing the two screws (see Figure 3-10 on page 3-12) from each handle.

Figure 3-10 Removing a Handle from the Appliance



Step 4 Replace the screws to keep the bezel attached to the appliance.

Proceed to the next section, "Attaching the Rack-Mounting Brackets to the Appliance," to continue the installation.

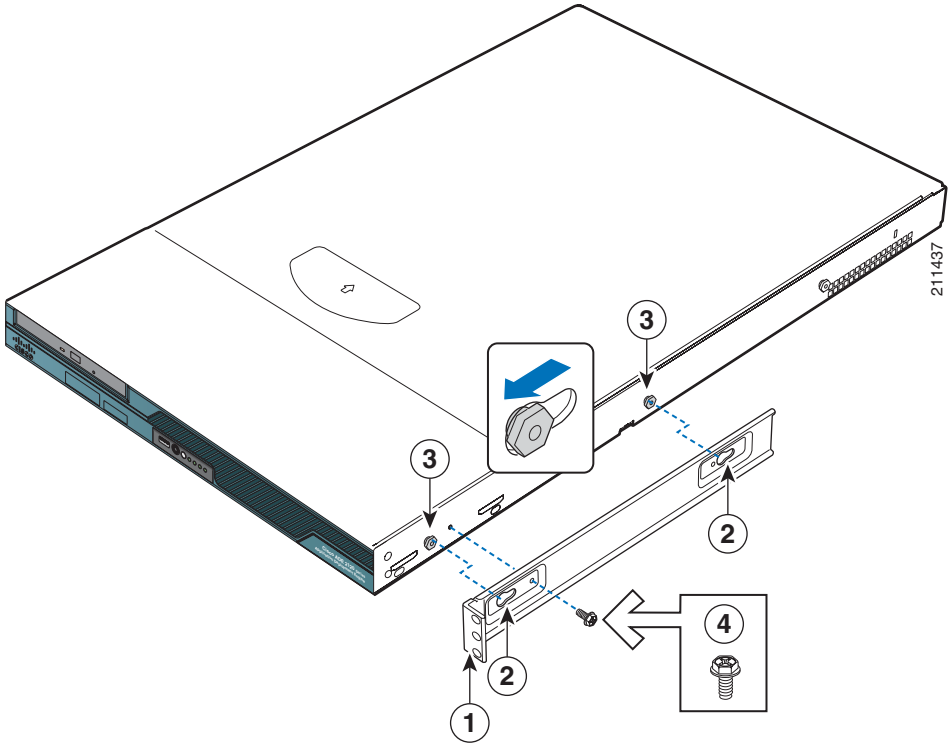
Attaching the Rack-Mounting Brackets to the Appliance

Before you begin, check the 10-32 x 1/2-inch screws that are included in the fastener pack (see Figure 3-2 on page 3-3) to see if they are the correct size for your rack. If not, obtain the correct screws to use in the procedure where "rack screws" are required.

To attach the brackets to the appliance:

Step 1 Place a mounting bracket (see location 1 in Figure 3-11 on page 3-13) along one side of the appliance in the front-mount position.

Figure 3-11 Attaching the Bracket



1	Appliance mounting bracket in front-mount position	**3**	Appliance tabs
2	Bracket holes	**4**	Hex head screws

Step 2 Align the holes (see location 2 in Figure 3-11) in the bracket with the tabs (see location 3 in Figure 3-11) on the appliance and place the bracket against the appliance.

Step 3 Slide the bracket toward the front of the appliance, until the forward-most hole on the bracket is aligned with the second hole on the appliance. (If you attempt to use the first hole on the appliance, the holes will not align properly with the bracket.)

Step 4 Attach the bracket to the appliance using hex head screws (see location 4 in Figure 3-11) and fasten the bracket to the appliance using a Number 2 Phillips screwdriver.

Step 5 Repeat Steps 2 through 4 for the other rack-mounting bracket.

Step 6 You are now ready to install the appliance into a 2-post rack.

Proceed to the next section, "Attaching the L Brackets to the Rack Posts," to continue the installation.

Attaching the L Brackets to the Rack Posts

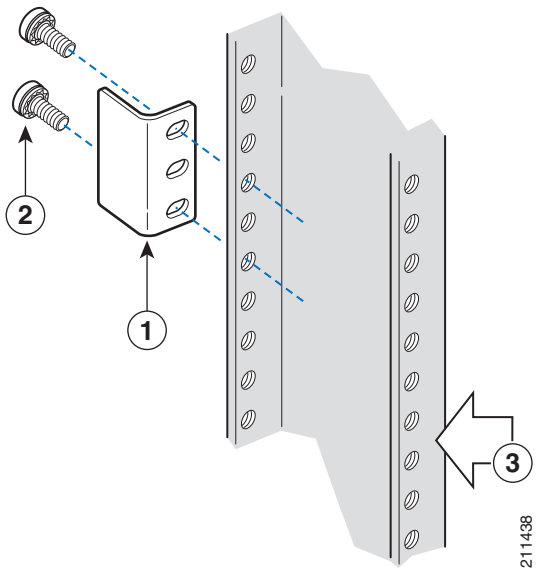
To attach the L brackets to the front posts:

Step 1 Position an L bracket (see location 1 in Figure 3-12) on the rear side of one of the posts (see location 3 in Figure 3-12).

Step 2 Attach the L bracket to the center post using the rack screws (see location 2 in Figure 3-12). Do not fully tighten the screws at this time.

Step 3 Repeat Steps 1 and 2 for the other L bracket.

Figure 3-12 Attaching an L Bracket to a Center Post



1	L bracket	**3**	Front side of right center post
2	Rack screws		

Proceed to the next section, "Installing the Appliance in the Rack," to continue the installation.

Installing the Appliance in the Rack

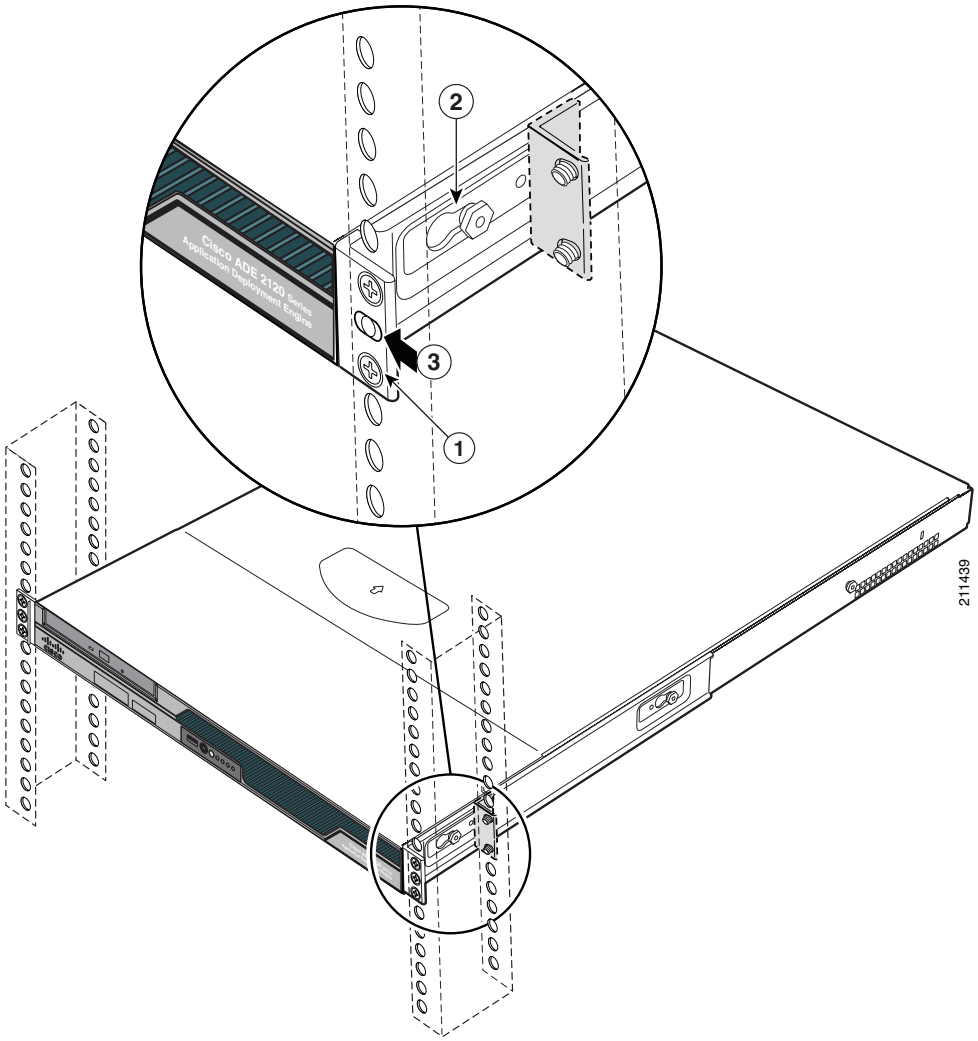
Caution Lifting the appliance and attaching it to the rack is a two-person job. If needed, use an appropriate lifting device. A fully loaded Cisco ADE 1010 and 2120 Series appliance weighs approximately 33 lb (14.96 kg).

To mount the appliance in the rack:

Step 1 Locate one person at the front of the rack and one at the rear.

Step 2 Position the appliance so that the L brackets (see location 1 in Figure 3-13) are inserted into the appliance mounting brackets (see location 2 in Figure 3-13).

Figure 3-13 L Brackets Inserted into Chassis Mounting Brackets



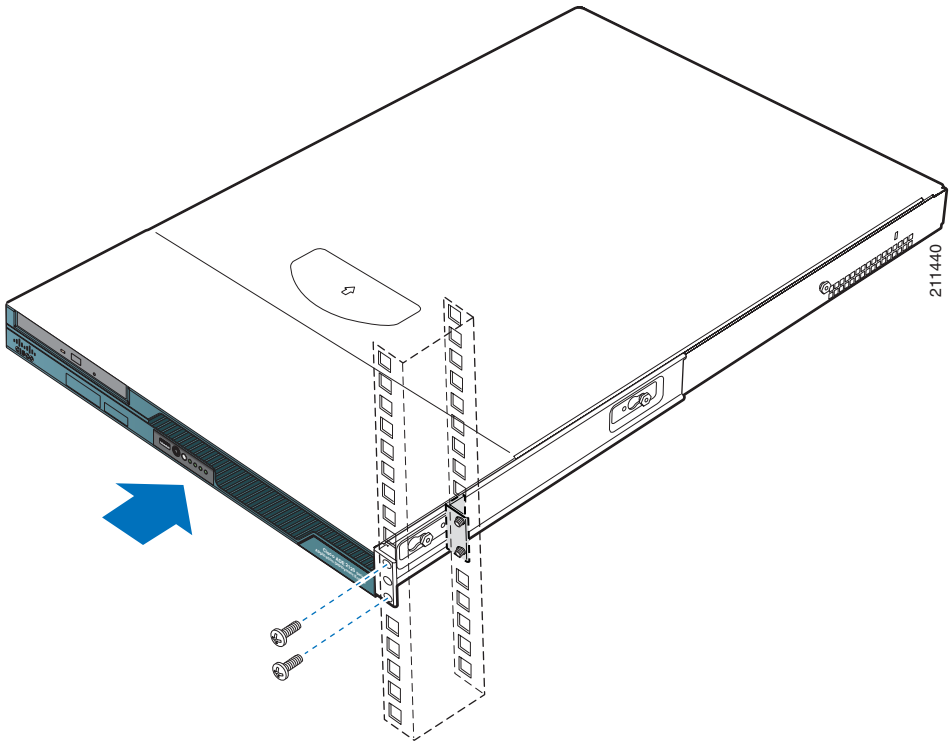
1	L brackets	**3**	Adjusting the L brackets
2	Appliance mounting brackets		

Step 3 While one person supports the weight of the appliance from the rear, the other person must adjust the L brackets to fit tightly into the appliance brackets (see location 3 in Figure 3-13).

Step 4 Slide the appliance toward the rear of the rack until the front of the appliance brackets contact the front of the center posts.

Step 5 Using the rack screws, attach the front of the mounting brackets to the front of the center posts. (See Figure 3-14 on page 3-16.)

Figure 3-14 Installing the Appliance in the Rack



Step 6 Tighten all screws.

Mounting the Cisco ADE 1010 and 2120 Series Appliance in a 4-Post Rack

Warning **When the appliance is installed in a rack and is fully extended on its slide rail, it is possible for the rack to become unstable and tip over, which could cause serious injury. To eliminate the risk of rack instability from extending the rail or in the event of an earthquake, you should affix the rack to the floor.**

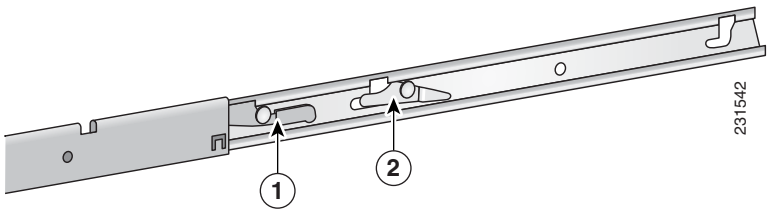
This section contains the following topics:

- Setting the Multi-Pin Adapters for the Rack Type, page 3-18
- Installing and Securing the Slide Rails in a Rack, page 3-19
- Installing the Slide Rails into a Rack with Round Holes, page 3-21
- Installing the Appliance into the Slide Rails, page 3-22

4-Post Rack-Mount Hardware Kit

Figure 3-15 shows the rails that you need to install the Cisco ADE 1010 and 2120 Series appliance in a 4-post rack. Table 3-2 describes the contents of the rack-mount hardware kit, Cisco part number CADE-1U-RAILS.

Figure 3-15 Release Levers on the Slide Rail Hardware



1	Slide release lever	**2**	Component release lever

Table 3-2 Rack-Mount Hardware Kit

Item	Quantity
Slide rails	2
Multi-pin adapters	4
Fastener screws	4

Depending on the type of holes that your rack has, you will use different hardware to attach the appliance to the rack:

- For racks with square holes, you use the multi-pin adapters to attach the appliance to the rack. The installation kit includes four fastener screws (see Table 3-2) that secure the multi-pin adapters after you install them in the rack.
- For racks with round holes, you use rack screws, rather than the multi-pin adapters. Rack screws are not included in the installation kit.

Note Each rail consists of three pieces that slide to extend the rail to its full length. To access the features of the innermost piece, such as the release levers (see Figure 3-16 on page 3-18), you must grasp the end of the innermost piece and pull it firmly out of the piece that contains it.

Proceed to the next section, "Installing the Slide Rails into a Rack with Square Holes," to continue the installation.

Installing the Slide Rails into a Rack with Square Holes

This section contains the following topics:

- Setting the Multi-Pin Adapters for the Rack Type, page 3-18
- Installing and Securing the Slide Rails in a Rack, page 3-19

Setting the Multi-Pin Adapters for the Rack Type

The multi-pin adapters allow the slide rails to be used in racks that have square mounting holes or round mounting holes.

To set the adapters for the rack type:

Step 1 On each slide rail, reverse the multi-pin adapter position to match the rack-mounting hole type if necessary. Remove the multi-pin adapter by rotating the swivel lock up, pressing the mounting pins together, and then pulling the adapter from the multi-pin bracket.

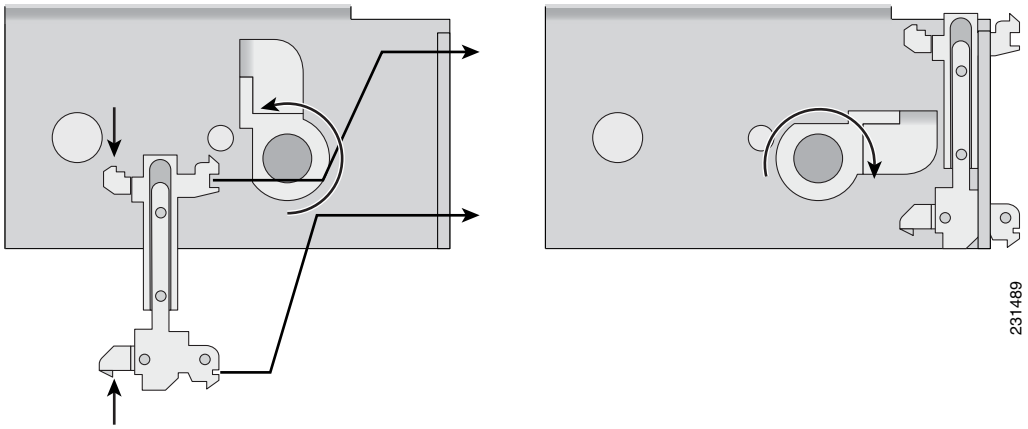
Step 2 Install the multi-pin adapter by pressing the pins together while inserting the adapter into the bracket. The multi-pin adapter must be fully locked in the bracket. Make certain both mounting pins on the multi-pin adapter are fully engaged in the multi-pin bracket, then lock the multi-pin adapter in place using the swivel lock.

Step 3 Repeat Steps 1 and 2 for both ends of each slide rail.

Step 4 To lock the adapters in place:

a. Rotate the swivel lock to the "up" position (see the left-hand illustration in Figure 3-16 on page 3-18). Press the pins together and insert the rack-mating end of the multi-pin adapter through the corresponding holes in the bracket. (Insert the adapter into the bracket with the slotted pin in the "up" position as shown.)

Figure 3-16 Locking the Adapter into Place



b. When the multi-pin adapter is fully seated in the bracket, close the swivel lock. (See the right-hand illustration in Figure 3-16.)

c. If you have the adapter seated properly, you should be able to easily rotate the swivel lock to the fully locked (closed) position.

Proceed to the next section, "Installing and Securing the Slide Rails in a Rack," to continue the installation.

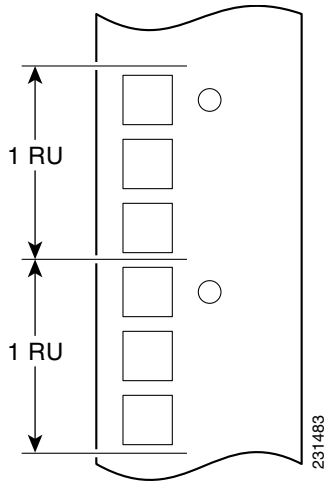
Installing and Securing the Slide Rails in a Rack

Caution If you mount the slide rail in holes that are not vertically aligned from front to back, you could damage the slide rail and your mounting may not be secure.

To install the slide rails into the rack:

Step 1 At all four rack uprights, determine the vertical position in the rack where the slide rails are to be installed. The top-most mounting hole for a particular rack unit (RU) mounting position is typically identified by a mark or hole. (See Figure 3-17.)

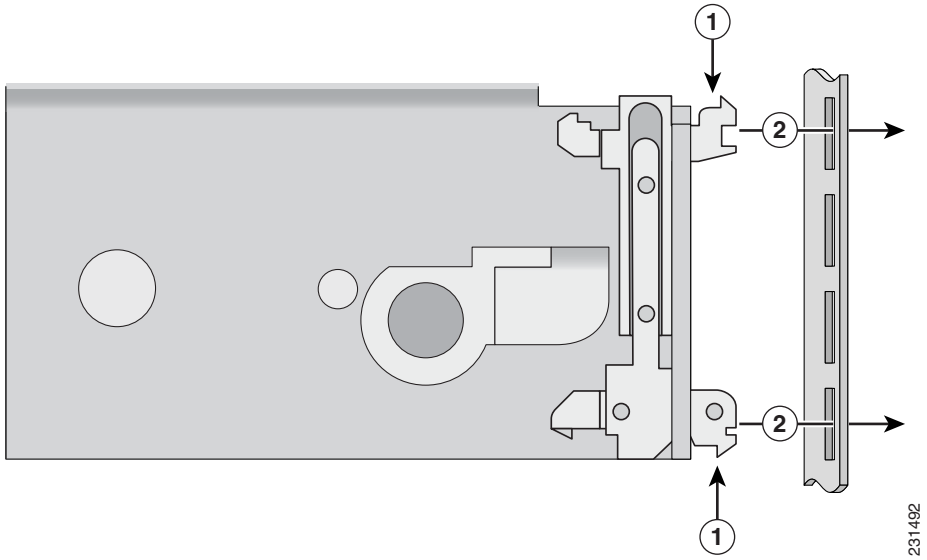
Figure 3-17 Mounting Position Marks on a Rack



Step 2 Noting the holes that you determined in Step 1, align the left slide rail with its mounting holes.

Step 3 Hold the slide rail in the desired rack-mounting position. At the rear of the slide rail, press the multi-pin adapter mounting pins together (see location 1 in Figure 3-18 on page 3-20) and insert the slide rail into the rack post (see location 2 in Figure 3-18 on page 3-20).

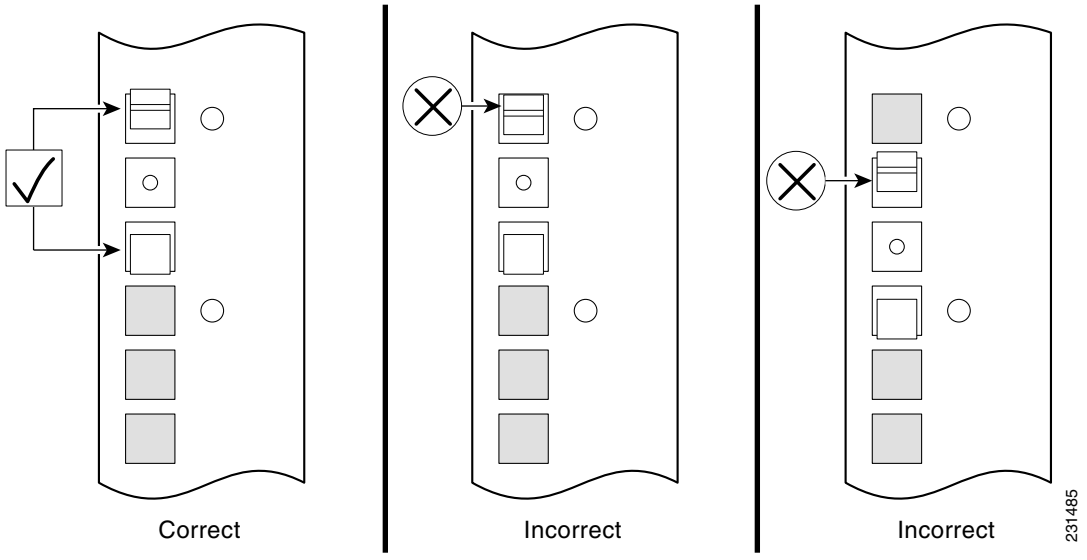
Figure 3-18 Inserting the Adapter Pins into the Mounting Holes



The following table describes some of the correct and incorrect ways to insert the adapter pins into the rack. (See Figure 3-19 on page 3-20.)

1	Correct	The multi-pin adapter pins are fully engaged in the rack holes. Also, the rack hole into which the top pin was inserted aligns with one of the round RU holes.
2	Incorrect	Note that the multi-pin adapter pins are not fully engaged in the rack holes.
3	Incorrect	The rack hole into which the top pin was inserted does not align with one of the RU holes.

Figure 3-19 Correct and Incorrect Adapter Pin Insertion



Step 4 Making certain the proper mounting holes on the rack upright are selected, repeat Step 2 at the slide rail front-mounting position. Ensure the slide rail is level.

Step 5 Fully extend the slide rail to its fully extended (locked) position. Press the slide extension release levers to release the lock. Move the slide rail in and out throughout its entire range of motion and make certain it does not bind.

If you notice some binding, recheck the mounting positions.

Step 6 Repeat Steps 2 through 5 for the right slide rail, ensuring that it is parallel and level with the left slide rail.

Proceed to the "Installing the Slide Rails into a Rack with Round Holes," to continue the installation.

Installing the Slide Rails into a Rack with Round Holes

Installing the slide rails into a rack with round holes requires rack screws (not included in the rack-mount installation kit). Before you begin the installation, obtain the appropriate rack screws.

Caution If you mount the slide rail in holes that are not vertically aligned from front to back, you could damage the slide rail and your mounting may not be secure.

Note When you install the rail hardware into a rack with round holes, you must position the rails so that they are inside the rack with the brackets facing outward. This placement decreases the amount of space between the posts into which you will slide the appliance. Ensure that you have adequate space for the appliance to slide into the rack.

The required clearance is approximately 17.4 inches (44.2 cm).

Installing the slide rails on a round-hole rack does not require the multi-pin adapters. If the multi-pin adapters are already installed in the slide rails, remove them by rotating the swivel lock up, pressing the mounting pins together, and then pulling the adapter from the multi-pin bracket. (See Figure 3-16 on page 3-18.)

To install the slide rails into the rack:

Step 1 At all four rack uprights, determine the vertical position in the rack where the slide rails are to be installed. The top-most mounting hole for a particular rack unit (RU) mounting position is typically identified by a mark or hole.

Step 2 Noting the holes that you determined in Step 1, align the left slide rail with its mounting holes.

Step 3 Hold the slide rail in the desired rack-mounting position, with the rail on the inside of the rack and the brackets facing outward. At the rear of the slide rail, press the rear bracket against the rear post of the rack and secure the bracket to the rack with rack screws.

Step 4 Making certain that you selected the proper mounting holes on the front rail post (that the rail is level), place the front bracket against the front post and secure the bracket to the rack with rack screws.

Step 5 Fully extend the slide rail to its fully extended (locked) position. Press the slide extension release levers to release the lock. Move the slide rail in and out throughout its entire range of motion and make certain it does not bind.

If you notice some binding, recheck the mounting positions.

Step 6 Repeat Steps 2 through 5 for the right slide rail, ensuring that it is parallel and level with the left slide rail.

Proceed to the next section, "Installing the Appliance into the Slide Rails," to continue the installation.

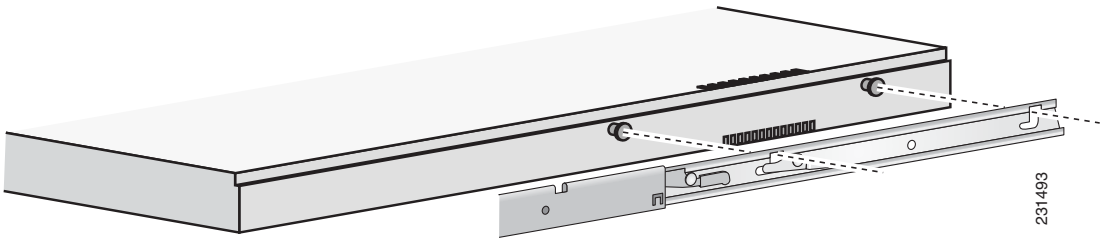
Installing the Appliance into the Slide Rails

To install the Cisco ADE 1010 and 2120 Series appliance into the slide rails:

Step 1 Extend both slide rails into the fully extended (locked) position.

Step 2 Align the mounting studs with the mounting channels on the slide rails. (See Figure 3-20 on page 3-22.)

Figure 3-20 Aligning the Slide Rail with the Mounting Studs



Step 3 Carefully place the component's mounting studs in the mounting channels on the slide rails. Allow the component mounting studs to fully seat in the mounting channels.

The component release levers (one on each slide rail) pivot to lock when the studs are fully engaged in the mounting channels and then to release the studs when you press the release. Ensure that the component release levers are in the locked position.

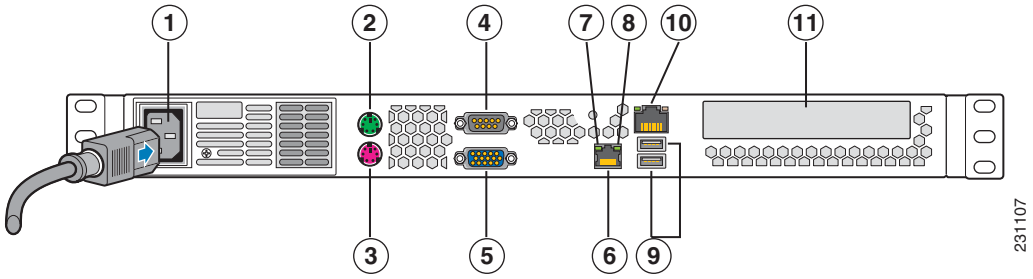
Step 4 Press and hold the left and right slide extension release levers and slowly slide the component and the slide rails into the fully retracted position.

Connecting Cables

This section describes how to connect your Cisco ADE 1010 and 2120 Series appliance to the network and the appliance console. It includes the following sections:

- Connecting the Network Interface, page 3-23
- Connecting the Console, page 3-23
- Cable Management, page 3-24

Figure 3-21 Cisco ADE 1010 and 2120 Series Appliance Rear View



1	AC power receptacle	**7**	NIC 2 port LED (activity)
2	PS/2 connector (mouse)	**8**	NIC 2 port LED (link)
3	PS/2 connector (keyboard)	**9**	Two USB ports (2.0)
4	Serial (EIA/TIA-232) console port	**10**	NIC 1 port (10/100/1000 Mb/s) or Ethernet 0
5	Video (VGA) port	**11**	PCI adapter card slot (expansion)
6	NIC 2 (10/100/1000 Mb/s) port or Ethernet 1		

Connecting the Network Interface

Warning **Do not work on the system or connect or disconnect cables during periods of lightning activity.** Statement 1001

This section describes how to connect the Cisco ADE 1010 and 2120 Series appliance network interface connector (NIC) port.

The RJ-45 port supports standard straight-through and crossover Category 5 unshielded twisted-pair (UTP) cables. Cisco does not supply Category 5 UTP cables; these cables are available commercially.

To connect the cable to the appliance network interface connector (NIC) port:

Step 1 Confirm that the appliance is turned off.

Step 2 Connect one end of the cable to the NIC port on the appliance. For cable pinouts, see the "Ethernet Port Connector" section on page 1-9.

Step 3 Connect the other end to a hub or switch in your network.

Connecting the Console

Warning **Do not work on the system or connect or disconnect cables during periods of lightning activity.** Statement 1001

Your Cisco ADE 1010 and 2120 Series appliance has a DCE-mode console port for connecting a console terminal to your appliance.

The appliance uses a DB-9 serial connector for the console port. (See the "Serial (Console) Port" section on page 1-9 for more information.)

To connect a terminal or a PC running terminal-emulation software to the console port on the Cisco ADE 1010 and 2120 Series appliance:

Step 1 Connect the terminal using a null-modem cable to the console port. For cable pinouts, see the "Serial (Console) Port Connector" section on page 1-10.

Step 2 Configure your terminal or terminal-emulation software for 9600 baud, 8 data bits, no parity, 1 stop bit, and no hardware flow control.

Cable Management

Cable management is the most visual aspect of your appliance setup. However, cable management is often overlooked because it can be time consuming.

Equipment racks and enclosures house more equipment today than ever before. This growth has increased the need for organized cable management both inside and outside the rack. Poor cable management not only leads to damaged cables or increased time for adding or changing out cables, but also blocks critical airflow or access. These problems can lead to inefficiencies in the performance of your equipment or even downtime.

There are many solutions to address cable management. They can range from simple cable management rings, to vertical or horizontal organizers, to troughs and ladders.

All Cisco ADE 1010 and 2120 Series appliance cables should be properly dressed so as not to interfere with each other or other pieces of equipment. Use local practices to ensure that the cables attached to your appliance are properly dressed.

Proceed to the next section, "Powering Up the Cisco ADE 1010 and 2120 Series Appliance," to continue the installation.

Powering Up the Cisco ADE 1010 and 2120 Series Appliance

Warning **Do not touch the power supply when the power cord is connected. For systems with a power switch, line voltages are present within the power supply even when the power switch is off and the power cord is connected. For systems without a power switch, line voltages are present within the power supply when the power cord is connected.** Statement 4

Warning **This equipment is intended to be grounded. Ensure that the host is connected to earth ground during normal use.** Statement 39

Checklist for Power Up

You are ready to power up the Cisco ADE 1010 and 2120 Series appliance if the following steps are complete:

- The appliance is securely mounted.
- Power, network, and interface cables are properly connected.

Power-Up Procedure

To power up the Cisco ADE 1010 and 2120 Series appliance and verify its initialization and self-test, follow this procedure. When the procedure is finished, the appliance is ready to configure.

Step 1 Review the information in the "Safety Guidelines" section on page 2-2.

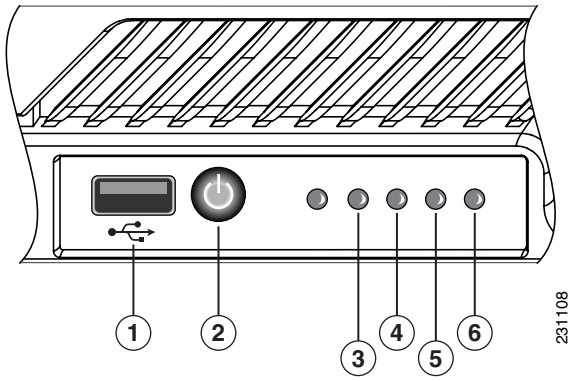
Step 2 Plug the AC power cord into the power cord receptacle at the rear of the appliance. (See location 1 in Figure 3-21 on page 3-23.)

Step 3 Connect the other end of the power cord to a power source at your installation site.

Step 4 Press the power button on the front of the appliance. (See location 2 in Figure 3-22.)

The appliance should begin booting. Once the operating system boots, you are ready to initialize the basic software configuration. (See the software installation guide or user guide that shipped with your appliance for proper configuration procedures.)

Figure 3-22 Cisco ADE 1010 and 2120 Series Appliance Front View



1	USB port	**4**	Hard Disk Drive Activity LED
2	Power button	**5**	NIC 1 LED
3	Appliance Power LED	**6**	NIC 2 LED

Checking the LEDs

When the Cisco ADE 1010 and 2120 Series appliance is up and running, observe the front-panel LEDs. The following LEDs provide power, activity, and status information:

ADE 1010 and 2120 Appliance Front-Panel LEDs

- Appliance power, green:
  - On when power is on.
  - Off when power is off or an error condition has been detected in the operating voltages.
- Hard disk activity, green:
  - On when appliance software has booted up, and the appliance is operational.
  - Off when appliance has not yet booted, or an error condition has been detected in the boot process.
- NIC 1 or NIC 2, green:
  - On when packets are transferring
  - Off when no packets are transferring

For more detailed information about the LEDs, see Appendix A, "Troubleshooting."

Removing or Replacing the Cisco ADE 1010 and 2120 Series Appliance

Warning **Before working on a system that has an On/Off switch, turn OFF the power and unplug the power cord.** Statement 1

Warning **Ultimate disposal of this product should be handled according to all national laws and regulations.** Statement 1040

To remove a Cisco ADE 1010 and 2120 Series appliance from your network, power it down, disconnect the power cords and network cables, and physically remove the appliance from the rack.

The appliance is in constant communication on your network; thus, when the network notices that the appliance is no longer responding to it, the network stops sending requests to the appliance. This change is transparent to users. If other appliances are attached to the network, the network continues sending requests to the other appliances.

To replace an appliance, remove it from the network. Then, install a new appliance and configure it using the same configuration parameters that you used for the removed appliance.

CHAPTER 4

Installing the Cisco ADE 1010 and 2120 Series Appliance Hardware Options

This chapter provides basic instructions for installing, replacing, and removing various hardware options in your Cisco ADE 1010 and 2120 Series appliance.

These instructions are intended for technicians who are experienced with installing, replacing, and removing the appliance hardware options. Additionally, site planners, network administrators, and facility maintenance personnel may also find this chapter helpful.

This chapter contains the following sections:

- Before You Begin, page 4-2
- Preparing for a Successful Installation, page 4-2
- Hardware Options, page 4-2
- Tools and Supplies Needed, page 4-2
- Beginning the Installation, page 4-3
- Installing and Removing Memory, page 4-4
- Installing and Removing Hard Disk Drives, page 4-7
- Removing and Installing a Slimline Optical Drive, page 4-13
- Removing and Installing the PCI Riser Assembly, page 4-19
- Installing and Removing a PCI Adapter Card, page 4-21
- Completing the Installation, page 4-24

Before You Begin

Before you begin, read the *Regulatory Compliance and Safety Information for the Cisco Application Deployment Engine (ADE) 1010 and 2120 Series Appliance* document that shipped with your appliance.

Warning **Only trained and qualified personnel should be allowed to install, replace, or service this equipment.** Statement 1030

Note The order of installation or uninstallation tasks may vary. This chapter lists the tasks in the order that constitutes best practices for the installation or uninstallation.

The directions *left* and *right* in this chapter are synonymous with the *installer's left* and *right*. They refer to the installation or uninstallation as you face the appliance from the front.

Preparing for a Successful Installation

The installation and uninstallation of the hardware options for the Cisco ADE 1010 and 2120 Series appliance involve many steps, most of which must be done in the order in which they are presented here. Each section explains one associated group of tasks upon which the next section's tasks are built.

Hardware Options

Table 4-1 describes the hardware options available for the Cisco ADE 1010 and 2120 Series appliance.

Table 4-1 Cisco ADE 1010 and 2120 Series Appliance Hardware Options

Description	Cisco Spare Part Number
1-GB RAM	CADE-RAM-15EU=
2-GB RAM	CADE-RAM-25EF=
250-GB Serial ATA[1] Hard Disk Drive (HDD)	CADE-HDD-T372050=
147-GB SAS[2] Hard Disk Drive (HDD)	CADE-HDD-A2100147=
DVD-ROM drive	800-29866-01

1. Serial ATA = Serial Advanced Technology Attachment.
2. SAS = Serial Attached SCSI (Small Computer System Interface).

Tools and Supplies Needed

You need the following tools and equipment to install, replace, and remove the hardware options:

- Number 1 and 2 Phillips screwdrivers
- ESD or antistatic wrist strap and conductive foam pad or mat (recommended)

Beginning the Installation

To begin the installation, you must remove the appliance top cover. Before removing the cover, power down the appliance, and unplug all external cables and the AC power cable.

Removing the Cover

Warning **Before working on a chassis or working near power supplies, unplug the power cord on AC units.** Statement 246

Note A nonskid surface or a stop behind the appliance may be needed to prevent the appliance from sliding on your work surface.

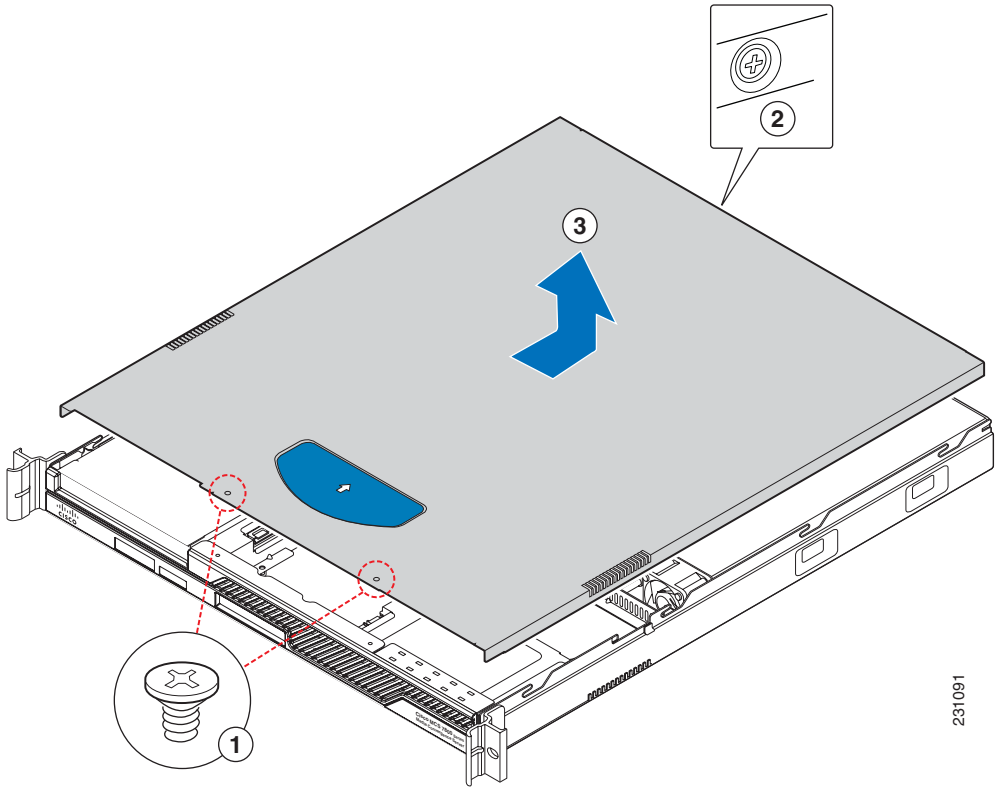
To remove the cover:

Step 1 Review the information in the "Safety Warnings" section on page ix and the "Safety Guidelines" section on page 2-2.

Step 2 Power down the appliance and all external devices. Disconnect the power cord and all external cables.

Step 3 Remove the two screws at the top front of the appliance chassis. (See location 1 in Figure 4-1.)

Figure 4-1 Removing the Cisco ADE 1010 and 2120 Series Appliance Cover



1	Screws at top front	**3**	Cover moves upward
2	Screw at rear		

Step 4 Loosen the screw at the rear of the appliance chassis. (See location 2 in Figure 4-1 on page 4-3.)

Step 5 Push the blue grip (located at the front of the appliance chassis) toward the rear of the appliance chassis. Slide the cover back until it stops and then lift the cover upward to remove it. (See location 3 in Figure 4-1 on page 4-3.)

Caution For proper cooling and airflow, replace the cover before turning on the appliance. Operating the appliance for extended periods (over 30 minutes) with the cover removed might damage the appliance components.

Installing and Removing Memory

Caution The memory is *not* hot-swappable. Before removing or replacing any dual in-line memory module (DIMM) memory, you must first take the Cisco ADE 1010 and 2120 Series appliance out of service, turn off all external devices connected to the appliance, turn off the appliance by pressing the power button, and unplug the AC power cord from the appliance or wall outlet.

The appliance provides four DIMM slots across two banks (or channels), bank 1 and bank 2. Bank 1 consists of DIMM slots 1A and 1B. Bank 2 consists of DIMM slots 2A and 2B. The slots associated with each bank or channel are located next to each other. A diagram on the logic board near the DIMM slots illustrates the location of the DIMM slots. Each slot accepts 533/667-MHz stacked Double-Data-Rate 2 (DDR2) Error Correction Code (ECC) or non-ECC unbuffered memory.

A minimum of one 256-MB DIMM is required in DIMM slot 1A. This configuration uses single-channel interleave. For dual-channel interleave, which provides optimum performance, a minimum of two DIMMs should be installed in DIMM slots 1A and 2A.

To operate in dual-channel dynamic paging mode, one of the following conditions must be met:

- Populate two identical DIMMs in slots 1A and 1B.
- Populate four identical DIMMs in each slot location.

Note Installing three DIMMs is not supported. Use one, two, or four DIMMs that are the same type and speed (identical DIMMs are preferred).

Reading from left to right, the slot location on the board for the DIMMs displays DIMM 1A, DIMM 2A, DIMM 1B, and DIMM 2B. (See locations 5 and 8 for DIMMs 1A and 1B and locations 6 and 7 for DIMMS 2A and 2B in Figure 4-2 on page 4-5.)

This section contains the following topics:

- Installing DIMMs, page 4-5
- Removing DIMMs, page 4-6

Installing DIMMs

Note Install DIMMs into slot DIMM 1A first. The appliance cannot power on without a DIMM in that slot.

To install the DIMMs:

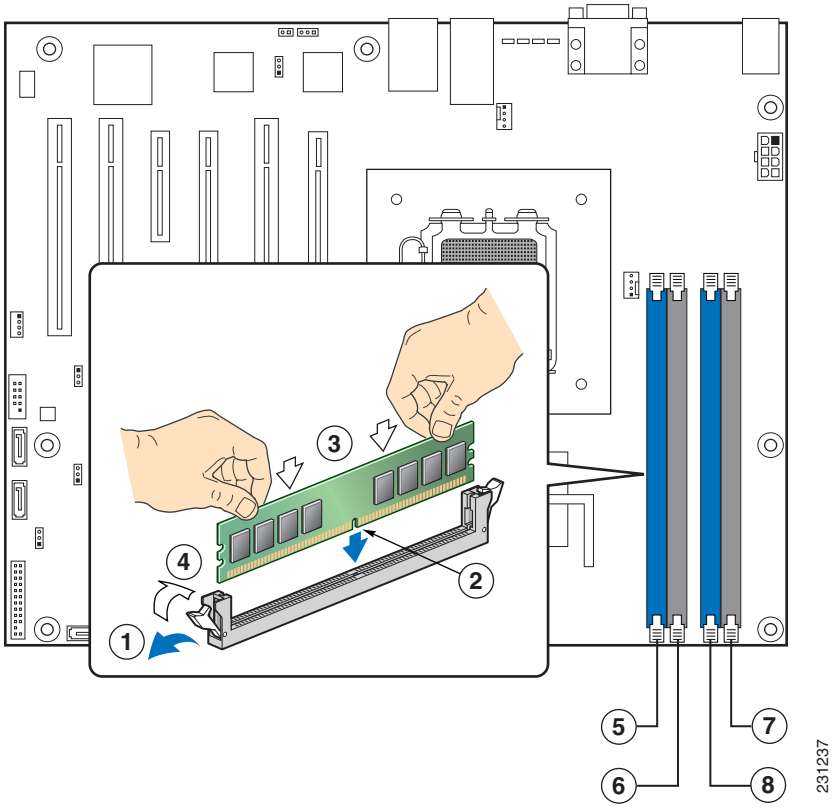
Step 1 Review the information in the "Safety Warnings" section on page ix and the "Safety Guidelines" section on page 2-2.

Step 2 Power down the appliance and all external devices. Disconnect the power cord and all external cables.

Step 3 Remove the appliance cover. For instructions, see the "Removing the Cover" section on page 4-3.

Step 4 Locate the DIMM slots. (See locations 5, 6, 7, and 8 in Figure 4-2.)

Figure 4-2 Installing Memory



1	Ejector tab (open)	**5**	DIMM slot 1A
2	DIMM notch	**6**	DIMM slot 2A
3	DIMM edge	**7**	DIMM slot 2B
4	Ejector tab (closed)	**8**	DIMM slot 1B

Step 5 Make sure the ejector tabs at both ends of the DIMM slots are pushed outward to the sides (open position). (See location 1 in Figure 4-2 on page 4-5.)

Step 6 Holding the DIMM by the top edges, remove it from its antistatic package.

Caution Do not touch the DIMM connectors. Handle the DIMM only by the edges.

Step 7 Position the DIMM above the slot. Align the notch on the bottom edge of the DIMM with the key in the DIMM slot. (See location 2 in Figure 4-2 on page 4-5.)

Step 8 Insert the bottom edge of the DIMM into the slot. (See location 3 in Figure 4-2 on page 4-5.)

Step 9 When the DIMM is correctly positioned, push down *firmly* on the top edge of the DIMM until the ejector tabs snap into place. (See location 4 in Figure 4-2 on page 4-5.)

Step 10 If you have other hardware options to install, do so now; otherwise, go to the "Completing the Installation" section on page 4-24.

Step 11 Install the appliance cover. For instructions, see the "Installing the Cover" section on page 4-24.

Removing DIMMs

To remove a DIMM:

Step 1 Review the information in the "Safety Warnings" section on page ix and the "Safety Guidelines" section on page 2-2.

Step 2 Power down the appliance and all external devices. Disconnect the power cord and all external cables.

Step 3 Remove the appliance cover. For instructions, see the "Removing the Cover" section on page 4-3.

Step 4 Locate the DIMM slots. (See Figure 4-2 on page 4-5.)

Step 5 Open the ejector tabs on the DIMM slot by pushing them out to the sides. (See location 1 in Figure 4-2 on page 4-5.)

Step 6 Holding the DIMM by the edges, lift it straight up out of the slot, and store it in an antistatic package.

Step 7 If you have other hardware options to install, do so now; otherwise, go to the "Completing the Installation" section on page 4-24.

Step 8 Install the appliance cover. For instructions, see the "Installing the Cover" section on page 4-24.

Installing and Removing Hard Disk Drives

This section contains the following topics:

- Installing a Hard Disk Drive, page 4-7
- Removing a Hard Disk Drive, page 4-11

Caution The hard drives are *not* hot-swappable. Before removing or replacing a hard drive, you must first take the Cisco ADE 1010 and 2120 Series appliance out of service, turn off all external devices connected to the appliance, turn off the appliance by pressing the power button, and unplug the AC power cord from the appliance or wall outlet.

Up to two hard drives can be installed. The HDD0 drive bay is at the left side of the appliance chassis, underneath the optional optical drive. The HDD1 drive bay is at the right side of the appliance chassis. The drives do not need to be installed in order; HDD1 can be installed before HDD0.

Installing a Hard Disk Drive

Note When you install a new hard disk drive in the Cisco ADE 1010 and 2120 Series appliance, you should use the HDD0 bay as the default location. (HDD1 should be used only as a secondary drive.)

To access HDD0, you must first remove the optical drive. For instructions on removing the optical drive, see the "Removing a Slimline Optical Drive" section on page 4-13.

If you are replacing a hard drive, see the "Removing a Hard Disk Drive" section on page 4-11 for instructions first. Return to these steps when directed.

Caution When you handle static-sensitive devices, take precautions to avoid damage from static electricity. For more information on handling these devices, see the "Preventing Electrostatic Discharge Damage" section on page 2-5.

To install a hard disk drive in the appliance:

Step 1 Inspect the new drive for any signs of damage.

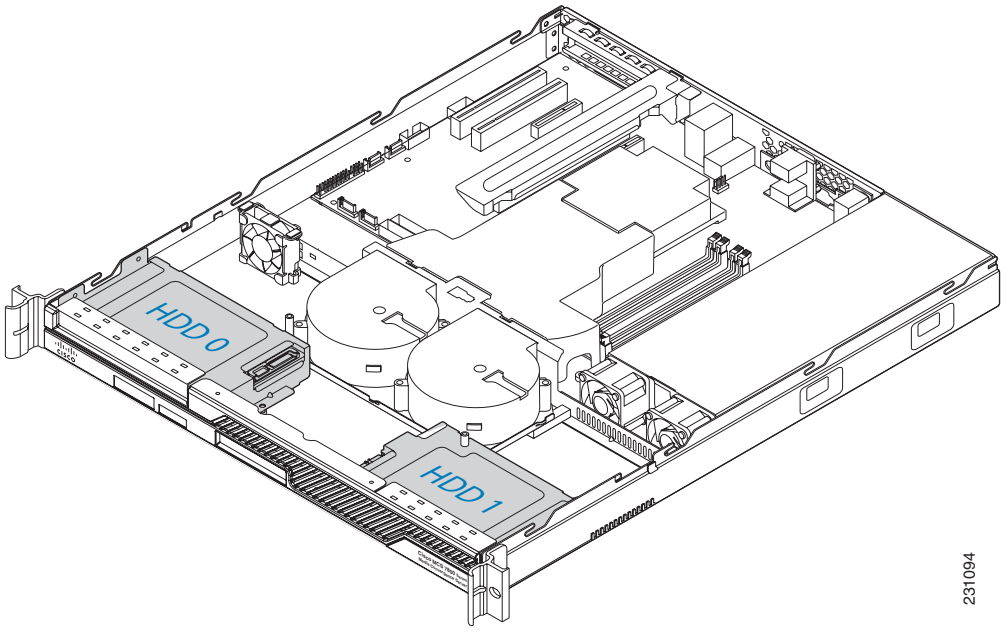
Step 2 Review the information in the "Safety Warnings" section on page ix and the "Safety Guidelines" section on page 2-2.

Step 3 Power down the appliance and all external devices. Disconnect the power cord and all external cables.

Step 4 Remove the appliance cover. For instructions, see the "Removing the Cover" section on page 4-3.

Step 5 Locate the drive position you want to use. (See Figure 4-3 on page 4-8.)

Figure 4-3 Locating the Drive Positions



1	Hard disk drive bay HDD0	**2**	Hard disk drive bay HDD1

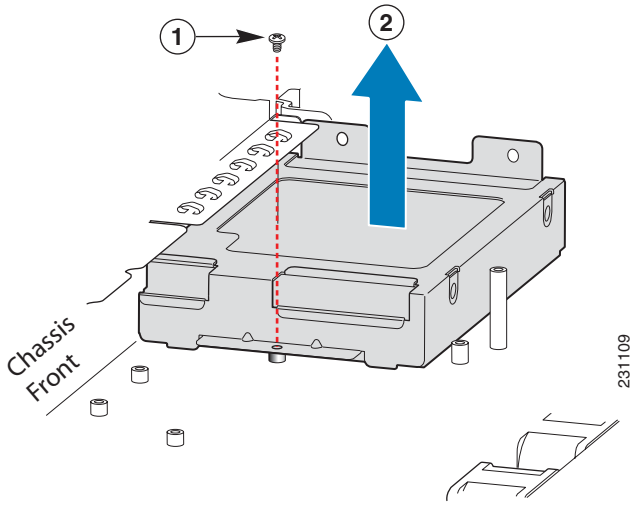
Step 6 **HDD1 location only:** Slide the power cables from the cable clip that is located on the top of the hard drive carrier.

Step 7 Remove the screw that holds the hard drive bracket to the appliance chassis. (See location 1 in Figure 4-4.)

Save this screw. You will use it to reinstall the drive assembly later.

Step 8 Lift the drive carrier from the appliance chassis. (See location 2 in Figure 4-4.)

Figure 4-4 Removing Drive Carrier from the Appliance

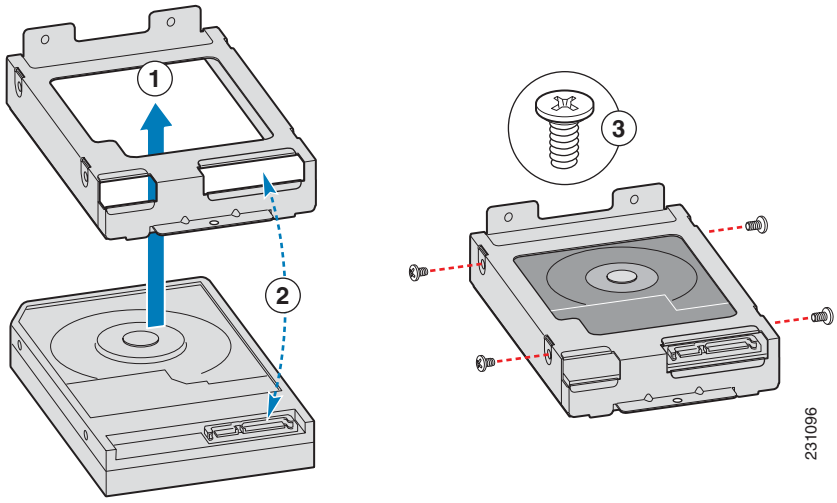


1	Hard drive bracket screw	**2**	Lift hard drive carrier up

Step 9 Position the drive with the drive connectors facing up. (See Figure 4-5.)

Step 10 Set the drive carrier over the drive (see location 1 in Figure 4-5). The data and power connectors must be positioned so they are accessible through the cutout (see location 2 in Figure 4-5).

Figure 4-5 Installing the Drive into the Drive Carrier



1	Set drive carrier over drive	**3**	Drive carrier screw
2	Drive carrier cutout		

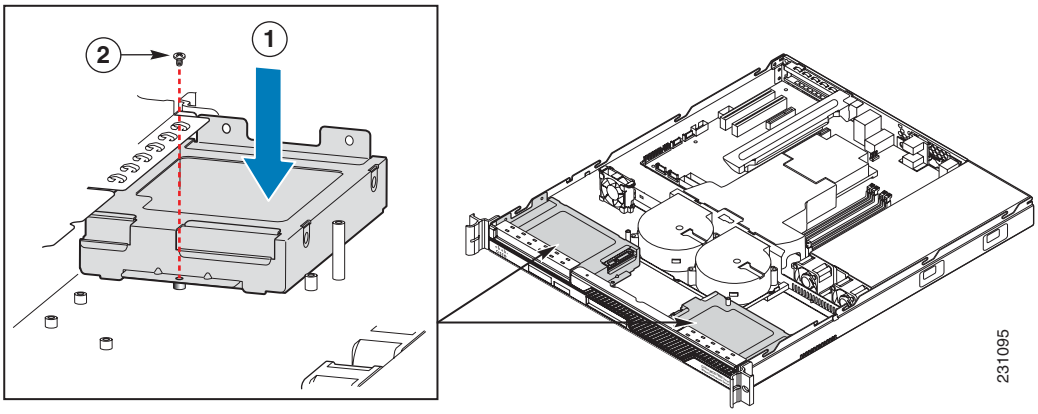
Step 11 Use the four screws provided to attach the drive to the carrier. (See location 3 in Figure 4-5.)

Step 12 Set the drive assembly into place in the appliance chassis. (See location 1 in Figure 4-6 on page 4-10.)

Step 13 Attach the drive assembly to the appliance with the screw that you removed in Step 7. (See location 2 in Figure 4-6 on page 4-10.)

Note The assembly that contains the optical drive bracket must be installed at the left side of the appliance chassis.

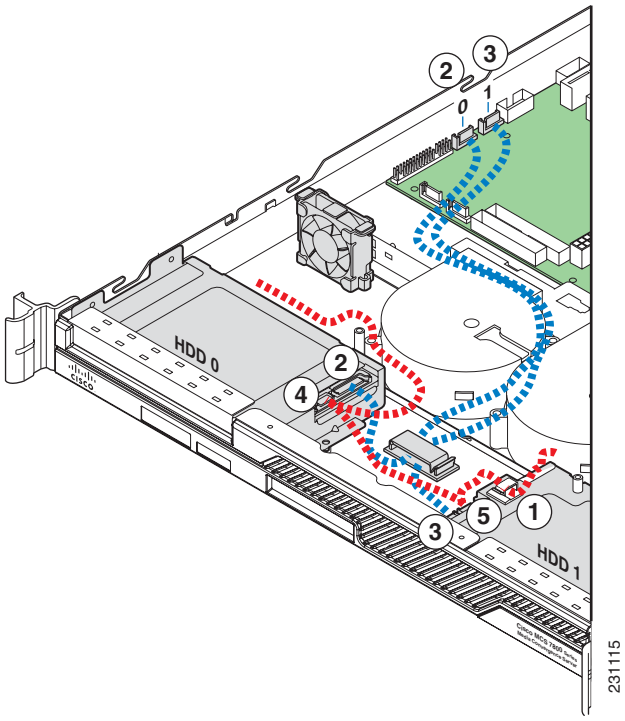
Figure 4-6 Installing the Drive Assembly in the Appliance



1	Hard drive assembly	**2**	Hard drive bracket screw

Step 14 **HDD1 location only:** Route the power cable into the cable clip on the top of the hard drive bracket. (See location 1 in Figure 4-7.)

Figure 4-7 Connecting Hard Drive Power and Data Cables



1	Cable clip location	**4**	HDD0 power connector
2	HDD0 data cable	**5**	HDD1 power connector
3	HDD1 data cable		

Step 15 Connect the data cable to the drive:

- If a drive is installed in the HDD0 carrier, connect the HDD0 data cable to the SATA 0 connector on the motherboard. (See location 2 in Figure 4-7 on page 4-10.)
- If a drive is installed in the HDD1 carrier, connect the HDD1 data cable to the SATA 1 connector on the motherboard. (See location 3 in Figure 4-7 on page 4-10.)

Note The data cables are factory routed underneath the fan module. Use caution to make sure you connect the correct cables between the motherboard and the hard drives. The cables are labeled at each end.

Step 16 Reconnect the power cable to the drive:

- If a drive is installed in the HDD1 carrier, attach the connector on the daisy chain power cable that is closest to the power supply to the HDD1 power connector. (See location 5 in Figure 4-7 on page 4-10.)
- If a drive is installed in the HDD0 carrier, attach the middle connector on the daisy chain power cable to the HDD0 power connector. (See location 4 in Figure 4-7 on page 4-10.)

Step 17 If you have other hardware options to install, do so now; otherwise, go to the "Completing the Installation" section on page 4-24.

Step 18 Reinstall the appliance cover. For instructions, see the "Installing the Cover" section on page 4-24.

Removing a Hard Disk Drive

To remove a hard disk drive from the Cisco ADE 1010 and 2120 Series appliance:

Step 1 Review the information in the "Safety Warnings" section on page ix and the "Safety Guidelines" section on page 2-2.

Step 2 Power down the appliance and all external devices. Disconnect the power cord and all external cables.

Step 3 Remove the appliance cover. For instructions, see the "Removing the Cover" section on page 4-3.

Step 4 Disconnect the power and data cables from the drive.

Step 5 **HDD1 location only:** Slide the power cable from the cable clip that is located on the top of the hard drive carrier. (See location 1 in Figure 4-7 on page 4-10.)

Step 6 Remove the screw that holds the hard drive bracket to the appliance chassis. (See location 1 in the Figure 4-8 on page 4-12.)

Save this screw. You will use it to reinstall the drive assembly later.

Step 7 Lift the drive carrier from the appliance chassis. (See location 2 in Figure 4-8 on page 4-12.)

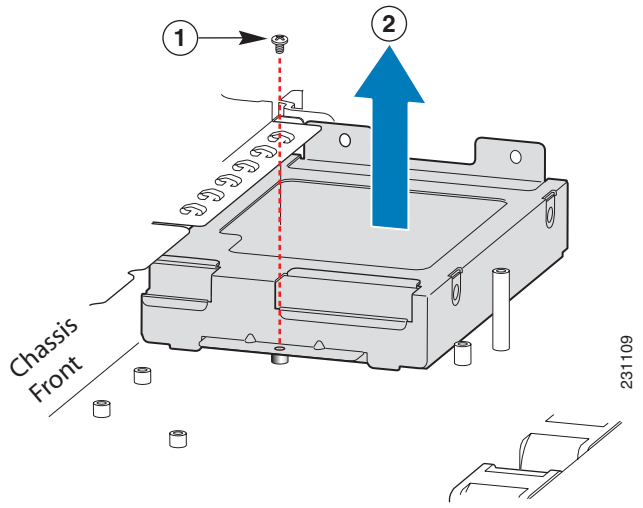
Step 8 Remove the four screws that attach the hard drive to the drive carrier. Lift the drive from the carrier. (See location 3 in Figure 4-5 on page 4-9.)

Store the drive in an antistatic bag.

Step 9 If you are installing a new drive, skip the rest of these steps and instead see the "Installing a Hard Disk Drive" section on page 4-7, beginning with Step 9.

Step 10 Insert the screws that held the drive in the carrier into the screw locations on the carrier for future use.

Figure 4-8 Removing the Hard Drive Carrier



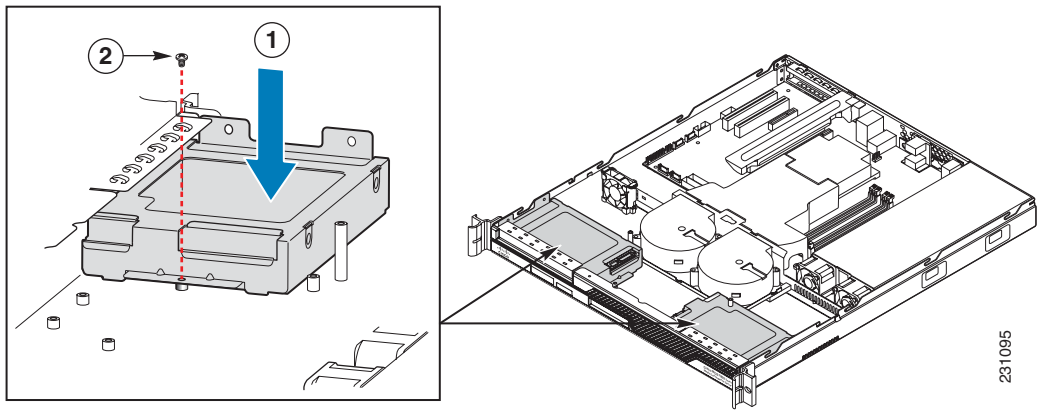
1	Hard drive bracket screw	2	Lift hard drive carrier up

Step 11 Set the drive assembly into place in the appliance chassis. (See location 1 in Figure 4-9.)

Step 12 Attach the drive assembly to the appliance chassis with the screw that you removed in Step 6. (See location 2 in Figure 4-9.)

Note The assembly that contains the optical drive bracket must be installed at the left side of the appliance.

Figure 4-9 Installing the Drive Carrier in the Appliance



1	Hard drive assembly	2	Hard drive bracket screw

Step 13 If you have other hardware options to install, do so now; otherwise, go to the "Completing the Installation" section on page 4-24.

Step 14 Reinstall the appliance cover. For instructions, see "Installing the Cover" section on page 4-24.

Removing and Installing a Slimline Optical Drive

The only reason to remove the optical drive from the Cisco ADE 1010 and 2120 Series appliance is to access the HDD0 hard drive bay. If you intend to remove or replace a drive in the HDD1 hard drive bay, you do not need to remove the optical drive.

This section contains the following topics:

- Removing a Slimline Optical Drive, page 4-13
- Installing a Slimline Optical Drive, page 4-16

Removing a Slimline Optical Drive

To remove a slimline optical drive:

Step 1 Review the information in the "Safety Warnings" section on page ix and the "Safety Guidelines" section on page 2-2.

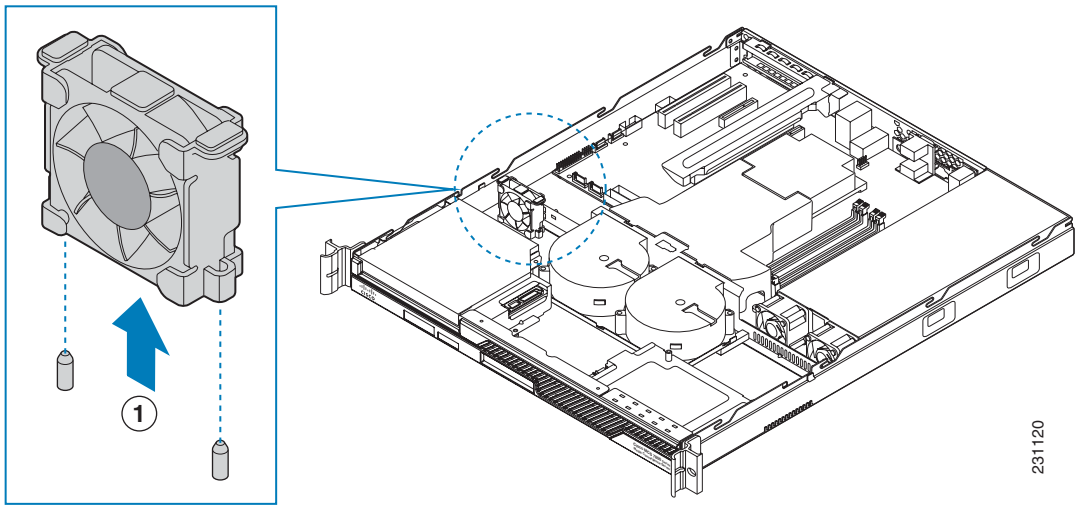
Step 2 Power down the appliance and all external devices. Disconnect the power cord and all external cables.

Step 3 Remove the appliance cover. For instructions, see the "Removing the Cover" section on page 4-3.

Step 4 Note the orientation of the PCI cooling fan that is located behind the optical drive bay, then lift the fan from the mounting pegs. (See location 1 in Figure 4-10.)

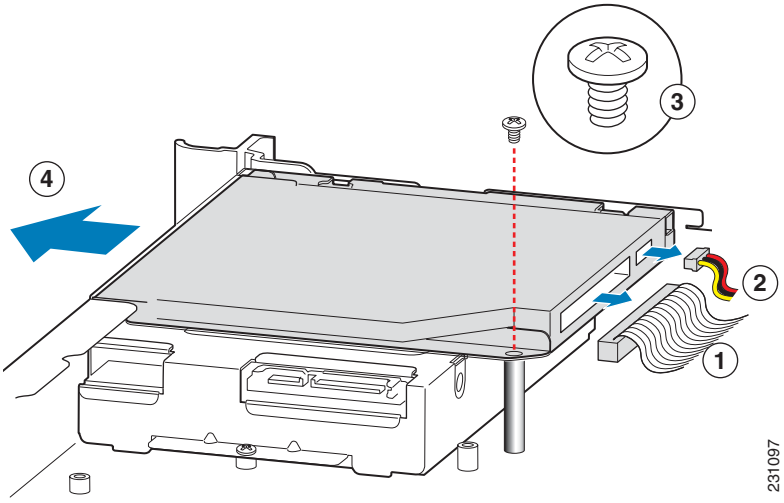
It is not necessary to disconnect the fan cable.

Figure 4-10 Lifting PCI Cooling Fan from Mounting Pegs



Step 5 Disconnect the optical drive power and data cables. (See locations 1 and 2 in Figure 4-11 on page 4-14.)

Figure 4-11 Removing the Optical Drive from the Appliance



1	Optical drive data cable	**3**	Optical drive bracket screw
2	Optical drive power cable	**4**	Slide the optical drive out

Step 6 Remove the screw that holds the optical drive bracket to the appliance chassis. (See location 3 in Figure 4-11.)

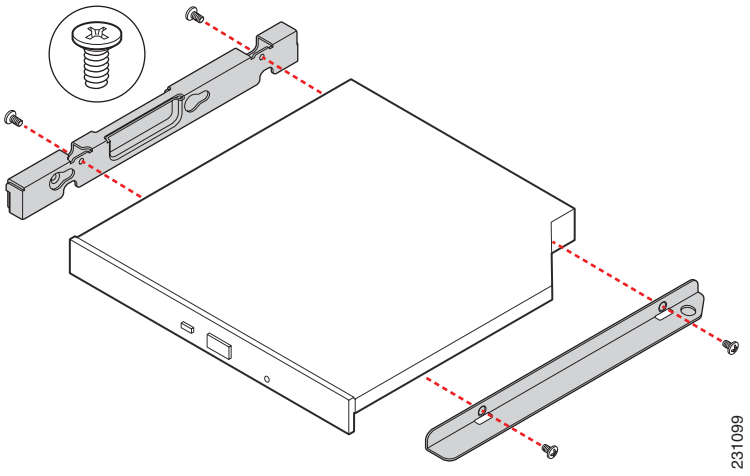
Save this screw. You will use it to reinstall the optical drive to the appliance chassis later.

Step 7 Slide the optical drive out through the front of the appliance. (See location 4 in Figure 4-11.)

Step 8 Remove the four screws that hold the optical drive to the brackets. (See Figure 4-12.)

Save these screws. You will use them to reinstall the optical drive to the brackets later.

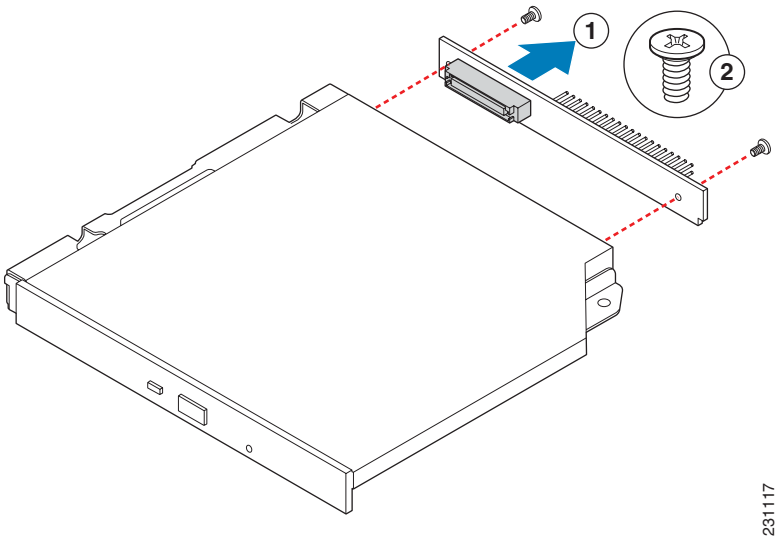
Figure 4-12 Attaching the Optical Drive Bracket to the Brackets



Step 9 Remove the two screws at the back of the optical drive to detach the interposer board. (See location 2 in Figure 4-13 on page 4-15.)

Step 10 Carefully pull the interposer board from the drive, detaching the interposer board connector from the drive. (See location 1 in Figure 4-13.)

Figure 4-13 Removing the Interposer Board from the Optical Drive



1	Interposer board disconnection	**2**	Screws from back of optical drive

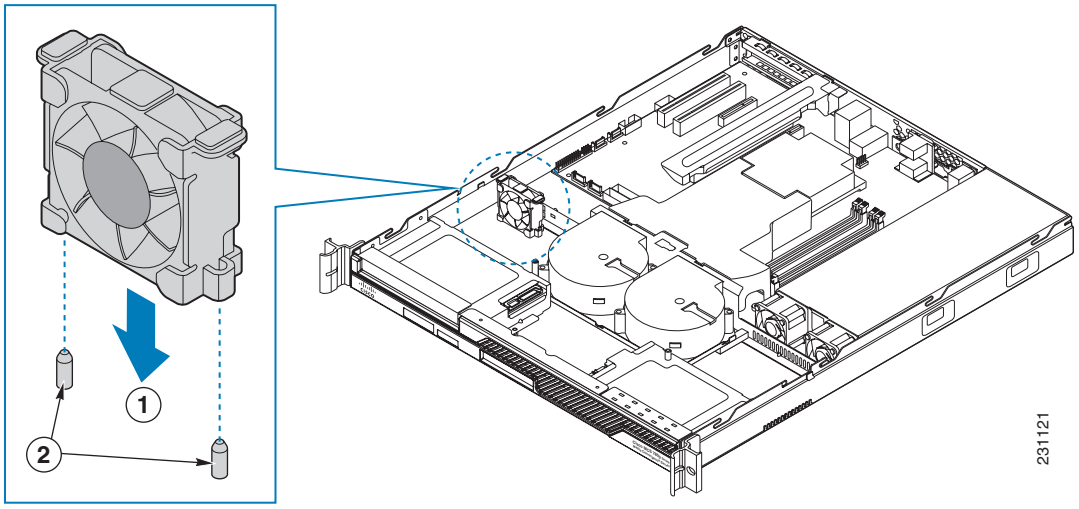
Step 11 If you are installing a replacement optical drive, skip the rest of these steps and instead continue with the "Installing a Slimline Optical Drive" section on page 4-16, Step 6.

Step 12 Store the brackets and interposer board for reinstallation later.

Step 13 Insert the PCI cooling fan onto the mounting pegs that are located behind the optical drive bay. (See Figure 4-14.)

The fan label should face the rear of the appliance.

Figure 4-14 Installing the PCI Cooling Fan



1	Inserting PCI fan	2	Mounting pegs

Step 14 If you have other hardware options to install, do so now; otherwise, go to the "Completing the Installation" section on page 4-24.

Step 15 Reinstall the appliance cover. For instructions, see the "Installing the Cover" section on page 4-24.

Installing a Slimline Optical Drive

To install a slimline optical drive:

Step 1 Review the information in the "Safety Warnings" section on page ix and the "Safety Guidelines" section on page 2-2.

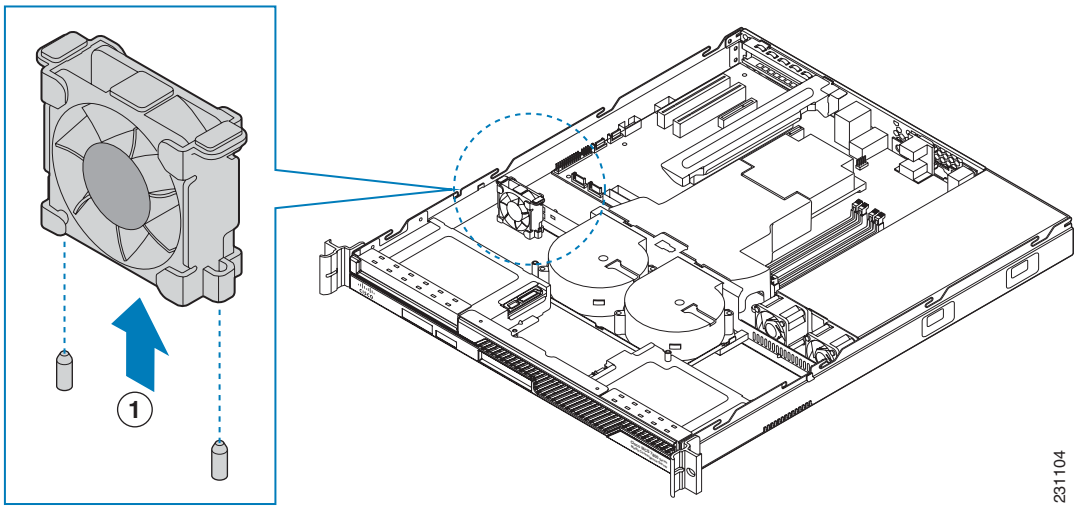
Step 2 Power down the appliance and all external devices. Disconnect the power cord and all external cables.

Step 3 Remove the appliance cover. For instructions, see the "Removing the Cover" section on page 4-3.

Step 4 Note the orientation of the PCI cooling fan that is located behind the optical drive bay, then lift the fan from the mounting pegs. (See location 1 in Figure 4-15.)

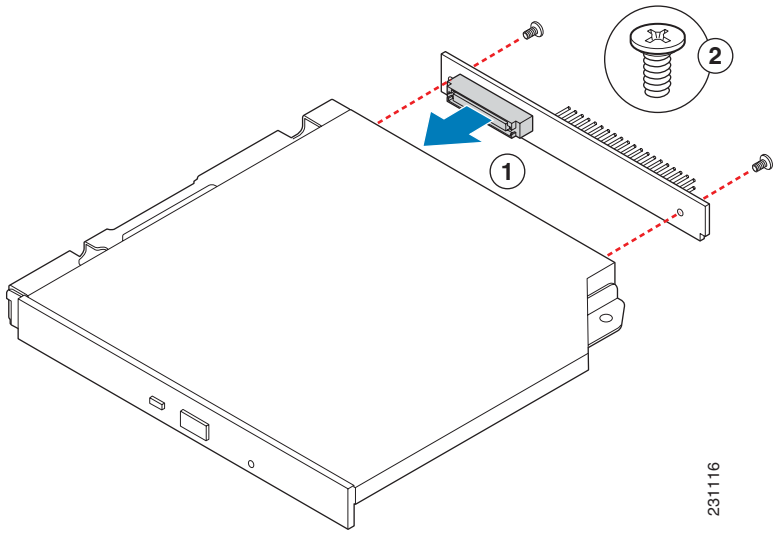
It is not necessary to disconnect the fan cable.

Figure 4-15 Lifting the PCI Cooling Fan from the Mounting Pegs



Step 5 Attach the interposer board to the rear of the DVD-ROM drive, using two screws. (See location 1 in Figure 4-16 on page 4-17.)

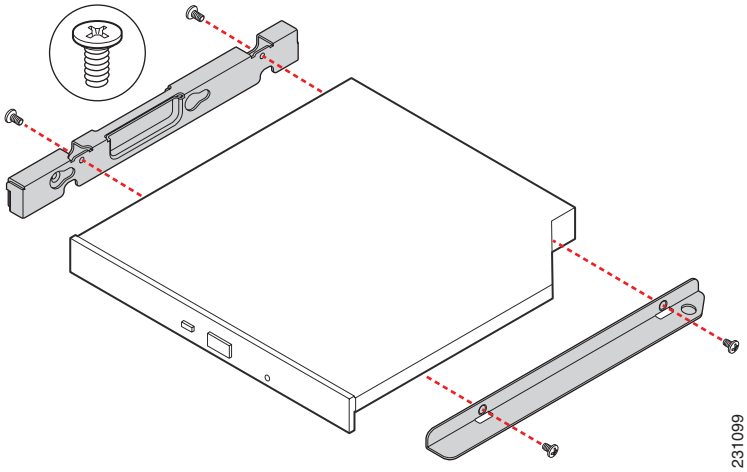
Figure 4-16 Attaching the Interposer Board



1	Interposer board connection	2	Screws from back of optical drive

Step 6 Attach the optical drive to the brackets, using the four screws as shown in Figure 4-17.

Figure 4-17 Attaching the Optical Drive to the Brackets



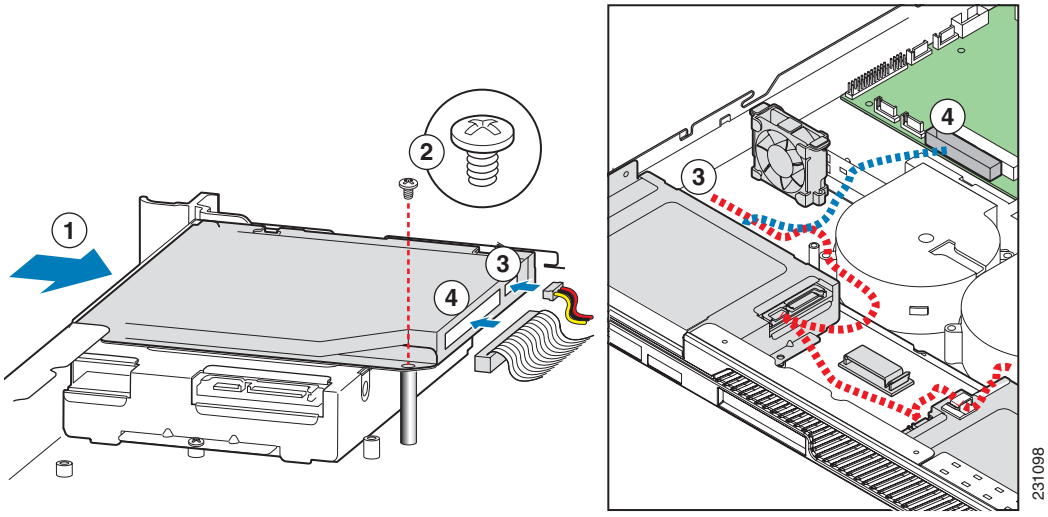
Step 7 Slide the optical drive assembly in through the front of the appliance chassis. (See location 1 in Figure 4-18 on page 4-18.)

Step 8 Reinstall the screw that you removed in Step 6 of the "Removing a Slimline Optical Drive" section on page 4-13.

Step 9 A daisy chain cable is used for the hard disk drives and the optical drive. Connect the end connector on the daisy chain cable to the power connector on the optical drive. (See location 3 in Figure 4-18 on page 4-18.)

Step 10 Connect the data cable to the optical drive and to the IDE connector on the motherboard. (See location 4 in Figure 4-18 on page 4-18.)

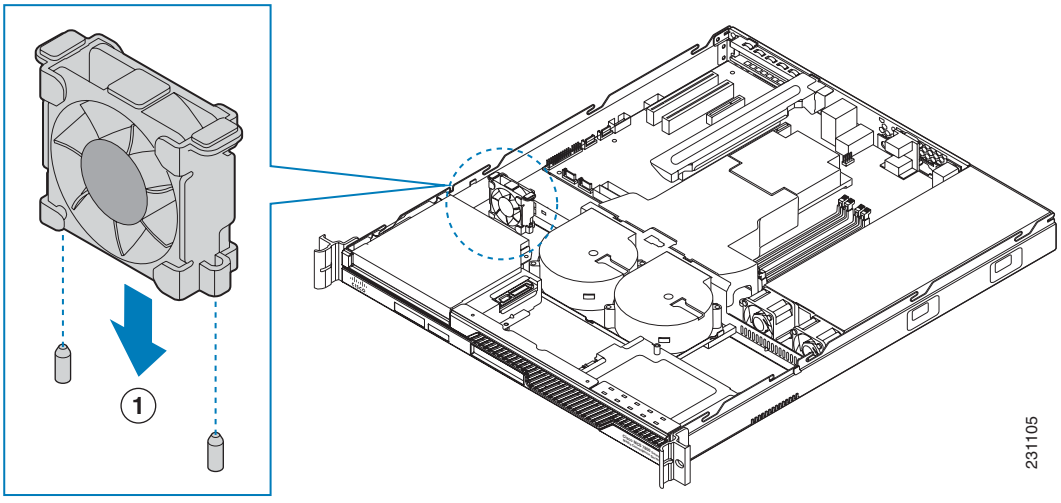
Figure 4-18 Installing the Optical Drive into the Appliance.



1	Slide the optical drive in	**3**	Optical drive power cable
2	Optical drive bracket screw	**4**	Optical drive data cable

Step 11 Reinsert the PCI cooling fan onto the mounting pegs that are located behind the optical drive bay. The fan label should face the rear of the appliance. (See location 1 in Figure 4-19.)

Figure 4-19 Installing the PCI Cooling Fan



Step 12 If you have other hardware options to install, do so now; otherwise, go to the "Completing the Installation" section on page 4-24.

Step 13 Reinstall the appliance cover. For instructions, see the "Installing the Cover" section on page 4-24.

Step 14 Plug all external devices and the AC power cable into the appliance.

Removing and Installing the PCI Riser Assembly

The PCI riser assembly must be removed before you can remove, replace, or install a PCI adapter card in the Cisco ADE 1010 and 2120 Series appliance.

This section contains the following topics:

- Removing the PCI Riser Assembly, page 4-19
- Installing the PCI Riser Assembly, page 4-20

Caution Before removing or replacing the PCI riser assembly, you must first take the Cisco ADE 1010 and 2120 Series appliance out of service, turn off all external devices connected to the appliance, turn off the appliance by pressing the power button, and unplug the AC power cord from the appliance or wall outlet.

Removing the PCI Riser Assembly

To remove the PCI riser assembly:

Step 1 Review the information in the "Safety Warnings" section on page ix and the "Safety Guidelines" section on page 2-2.

Step 2 Power down the appliance and all external devices. Disconnect the power cord and all external cables.

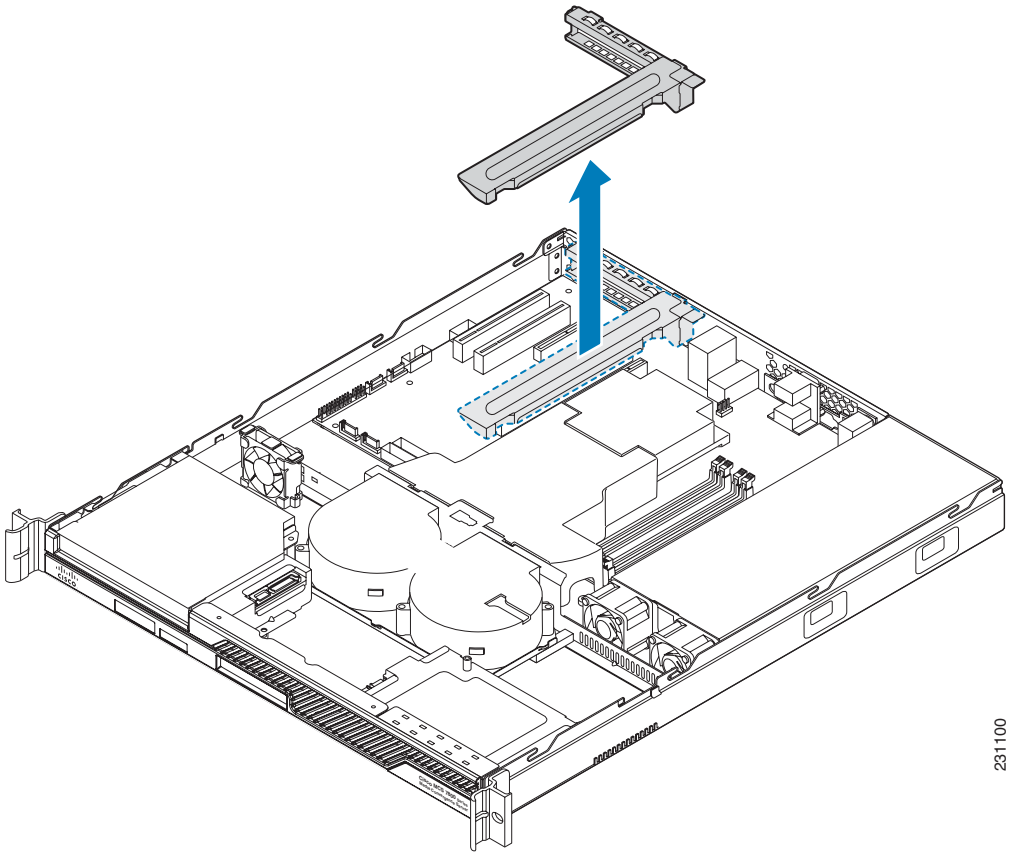
Step 3 Remove the appliance cover. For instructions, see the "Removing the Cover" section on page 4-3.

Step 4 Disconnect any cables attached to any adapter cards.

Step 5 Lift the riser assembly up to remove it. (See Figure 4-20 on page 4-20.)

Use caution to gently remove the riser card from the adapter card slot so you do not damage the slot or the riser card.

Figure 4-20 Removing the PCI Riser Assembly from the Appliance



Step 6 If you need to add or replace a PCI adapter card, see the "Installing and Removing a PCI Adapter Card" section on page 4-21.

Step 7 If you removed the PCI riser assembly for another procedure, continue with that procedure.

Installing the PCI Riser Assembly

Note For clarity, the figure in these instructions does not show an attached adapter card. If you are installing an adapter card, do so before installing the PCI riser assembly into your appliance.

To install the PCI riser assembly:

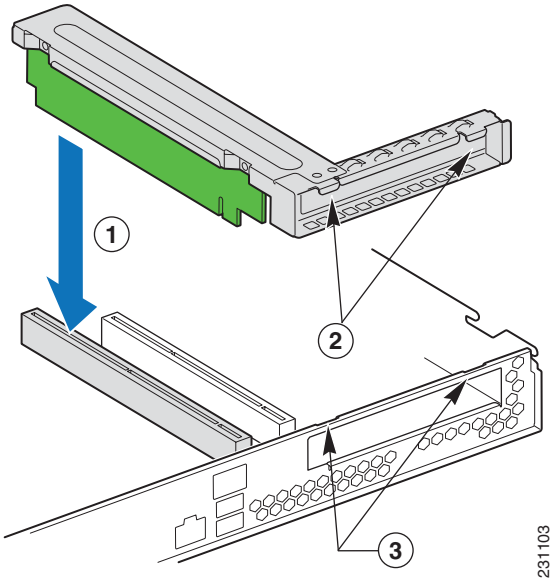
Step 1 Review the information in the "Safety Warnings" section on page ix and the "Safety Guidelines" section on page 2-2.

Step 2 Power down the appliance and all external devices. Disconnect the power cord and all external cables.

Step 3 Lower the PCI riser assembly into place over the adapter card slot. (See location 1 in Figure 4-21 on page 4-21.)

Step 4 Align the two hooks in the PCI riser assembly (see location 2 in Figure 4-21) with the matching slots at the back of the appliance (see location 3 in Figure 4-21).

Figure 4-21 Installing the PCI Riser Assembly into the Appliance



1	PCI riser assembly over adapter card slot	**3**	Appliance back-panel slots
2	Two hooks in PCI riser assembly		

Step 5 Press down *firmly* until the two hooks on the rear of the PCI riser assembly engage the appliance back-panel slots.

Step 6 Reinstall the appliance cover. For instructions, see the "Installing the Cover" section on page 4-24.

Installing and Removing a PCI Adapter Card

Caution The PCI adapter cards are *not* hot-swappable. Before removing or replacing an adapter card, you must first take the Cisco ADE 1010 and 2120 Series appliance out of service, turn off all external devices connected to the appliance, turn off the appliance by pressing the power button, and unplug the AC power cord from the appliance or wall outlet.

This section describes how to install a PCI adapter in the Cisco ADE 1010 and 2120 appliance. Before you install an adapter, review the following information:

- Your appliance comes with one Peripheral Component Interconnect-Extended (PCI-X) adapter slot. This slot is located in the appliance with a PCI riser assembly. (See the "Removing the PCI Riser Assembly" section on page 4-19 for instructions on how to remove the PCI riser assembly.)

- Locate the documentation that comes with the PCI adapter card and follow those instructions in addition to the instructions in this chapter.

This section contains the following topics:

- Installing a PCI Adapter Card, page 4-22
- Removing a PCI Adapter Card, page 4-23

Installing a PCI Adapter Card

Caution When you handle static-sensitive devices, take precautions to avoid damage from static electricity. For more information on handling these devices, see the "Preventing Electrostatic Discharge Damage" section on page 2-5.

To install a PCI adapter card:

Step 1 Review the information in the "Safety Warnings" section on page ix and the "Safety Guidelines" section on page 2-2.

Step 2 Power down the appliance and all external devices. Disconnect the power cord and all external cables.

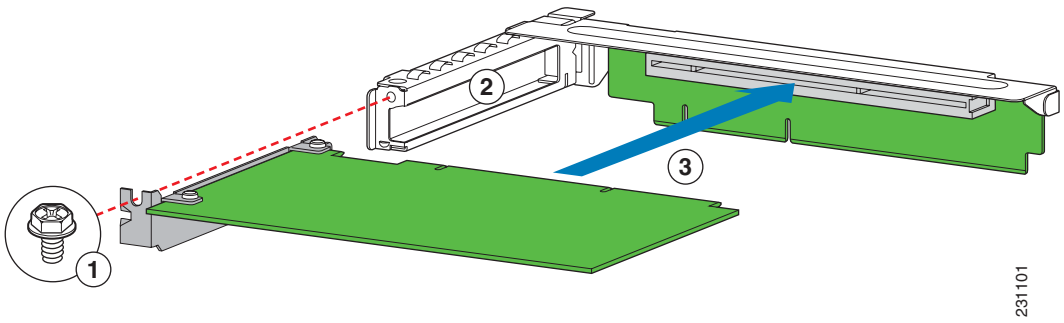
Step 3 Remove the appliance cover. For instructions, see the "Removing the Cover" section on page 4-3.

Step 4 Remove the PCI riser assembly. For instructions, see the "Removing the PCI Riser Assembly" section on page 4-19.

Step 5 Remove the screw at the rear of the PCI riser assembly. (See location 1 in Figure 4-22.)

Save this screw. You will use it to reinstall the PCI riser assembly later.

Figure 4-22 Installing an Adapter Card



1	PCI riser assembly screw	**3**	Adapter card
2	Filler panel		

Step 6 If a filler panel is installed over the opening at the rear of the PCI riser assembly, lift it from the PCI riser assembly. (See location 2 in Figure 4-22.)

Save the filler panel in case you need to remove the adapter card later.

Step 7 Touch the static-protective package containing the adapter card to any unpainted metal surface on the appliance and then remove the adapter card from the static-protective package. Avoid touching the components and the gold-plated edge connectors on the adapter card.

Step 8 Place the adapter card, component side up, on a flat, static-protective surface and set any jumpers or switches as described in the adapter documentation, if necessary.

Caution When you install an adapter card in the appliance, be sure that it is completely and correctly seated in the PCI slot before you power up the appliance. Incomplete insertion might cause damage to the adapter card.

Step 9 Insert the adapter card into the slot in the PCI riser assembly. Push the adapter card into place *firmly* until it seats in the riser card connector, but use caution so you do not twist or bend the card. (See location 3 in Figure 4-23 on page 4-24.)

Step 10 Reinstall the screw you removed in Step 5. (See location 1 in Figure 4-22 on page 4-22.)

Step 11 Reinstall the PCI riser assembly into the appliance. For instructions, see the "Installing the PCI Riser Assembly" section on page 4-20.

Step 12 If you have other hardware options to install, do so now; otherwise, go to the "Completing the Installation" section on page 4-24.

Step 13 Reinstall the appliance cover. For instructions, see the "Installing the Cover" section on page 4-24.

Step 14 Plug all external devices and the AC power cable into the appliance.

Removing a PCI Adapter Card

To remove a PCI adapter card:

Step 1 Review the information in the "Safety Warnings" section on page ix and the "Safety Guidelines" section on page 2-2.

Step 2 Power down the appliance and all attached devices. Disconnect the power cord and all external cables.

Step 3 Remove the appliance cover. For instructions, see the "Removing the Cover" section on page 4-3.

Step 4 Remove the PCI riser assembly. For instructions, see the "Removing the PCI Riser Assembly" section on page 4-19.

Step 5 Remove the screw at the rear of the riser assembly. (See location 1 in Figure 4-23 on page 4-24.)

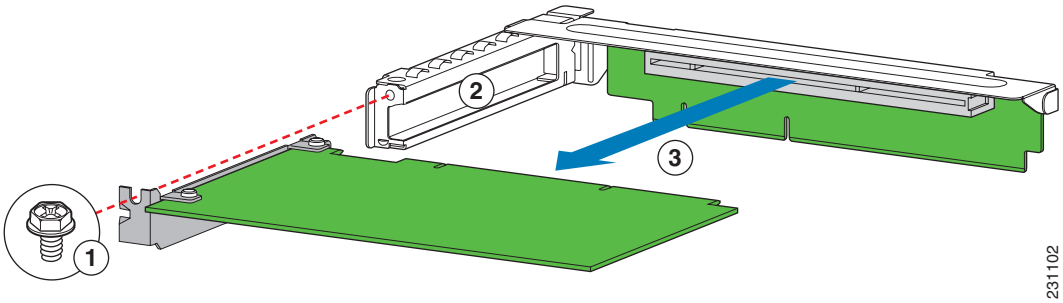
Save this screw. You will use it to reinstall the PCI riser assembly later.

Step 6 Pull the adapter card from the slot in the PCI riser assembly. You may need to wriggle the card from front to back to remove it, but use caution so you do not twist or bend the adapter card. (See location 3 in Figure 4-23 on page 4-24.)

Step 7 Reinstall the filler panel over the opening at the rear of the riser assembly. (See location 2 in Figure 4-23 on page 4-24.)

Step 8 Reinstall the screw you removed in Step 5. (See location 1 in Figure 4-23 on page 4-24.)

Figure 4-23 Removing a Full-Height Add-In Card



1	PCI riser assembly screw	**3**	Adapter card
2	Filler panel		

Note If you do not reinstall the adapter card, make sure that the empty adapter card slot has a filler panel installed.

Step 9 Reinstall the PCI riser assembly into the appliance. For instructions, see the "Installing the PCI Riser Assembly" section on page 4-20.

Step 10 Reinstall the appliance cover. For instructions, see the "Installing the Cover" section on this page.

Step 11 Plug all external devices and the AC power cable into the appliance.

Completing the Installation

To complete your installation, you must reinstall the Cisco ADE 1010 and 2120 Series appliance cover and connect all external cables. Follow the instructions in this section.

Caution To maintain proper cooling and airflow, install the appliance cover before turning on the appliance. Operating the appliance for extended periods (over 30 minutes) with the appliance cover removed might damage the appliance components.

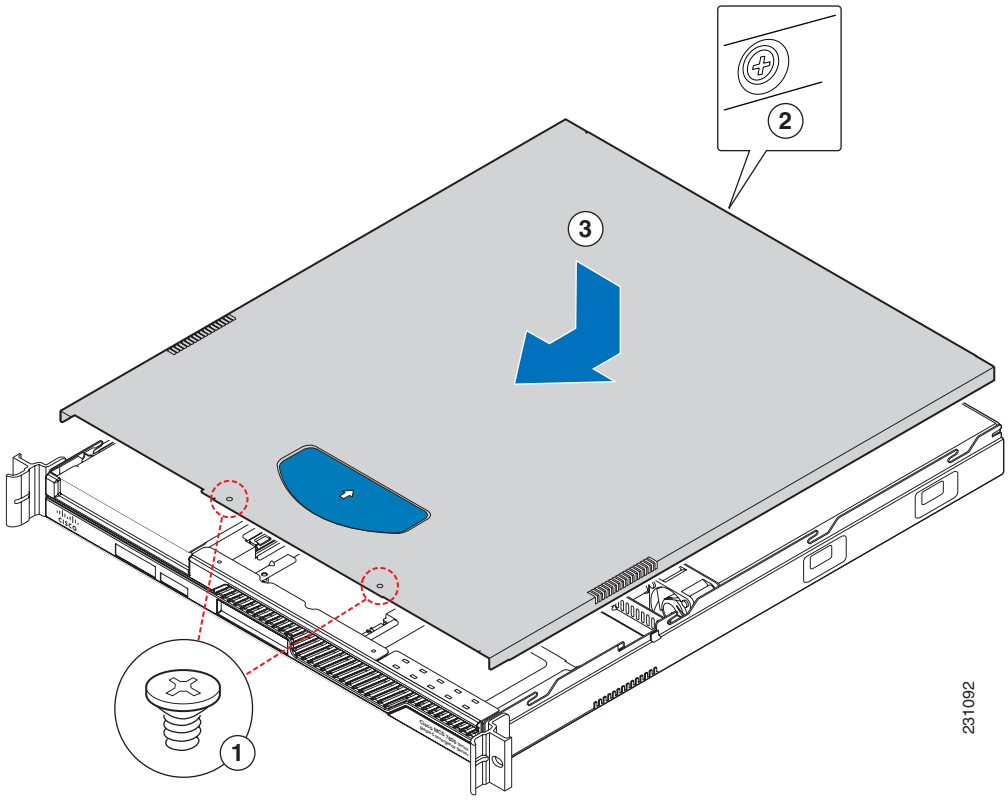
Installing the Cover

To install the appliance cover after you have completed your hardware options installation or maintenance:

Step 1 Review the information in the "Safety Warnings" section on page ix and the "Safety Guidelines" section on page 2-2.

Step 2 Place the cover over the appliance so that the side edges of the cover sit just inside the appliance sidewalls. Slide the cover forward. (See location 3 in Figure 4-24 on page 4-25.)

Figure 4-24 Installing the Cisco ADE 1010 and 2120 Series Appliance Cover



1	Screws at top front	**3**	Cover moves downward
2	Screw at rear		

Step 3 Reinstall the screw at the rear of the appliance. (See location 2 in Figure 4-24.)

Step 4 Reinstall the two screws at the top front of the appliance. (See location 1 in Figure 4-24.)

Step 5 Reconnect all external cables and the AC power cord.

APPENDIX A

Troubleshooting

The Cisco ADE 1010 and 2120 Series appliance undergoes extensive testing before it leaves the factory. If you encounter problems, use the information in this appendix to help isolate problems or to eliminate the appliance as the source of the problem.

Although an overtemperature or overvoltage condition is unlikely at initial startup, a discussion of environmental temperature and voltage monitoring functions is provided in the "Environmental Monitoring" section on page 1-10.

Note The procedures in this chapter assume that you are troubleshooting the initial Cisco ADE 1010 and 2120 Series appliance startup, and that the appliance is in the original factory configuration. If you have removed or replaced components or changed any default settings, the recommendations in this chapter might not apply.

This appendix does not cover every possible trouble event that might occur on an appliance but instead focuses on those events that are frequently seen by the customer.

This appendix contains the following sections:

- Troubleshooting Overview, page A-1
- Problem Solving, page A-2
- Reading the LEDs, page A-5
- Product Serial Number Location, page A-7

Troubleshooting Overview

At the initial system boot, you should verify the following:

- External power cable is connected, and the proper power source is being applied. (See the "Power Considerations" section on page 2-9, the "Powering Up the Cisco ADE 1010 and 2120 Series Appliance" section on page 3-24, and the "Troubleshooting the Power and Cooling Systems" section on page A-3.)
- The appliance fan and blower are operating. (See the "Airflow Guidelines" section on page 2-9 and the "Troubleshooting the Power and Cooling Systems" section on page A-3).
- The appliance software boots successfully.
- The adapter cards (if installed) are properly installed in their slots, and each initializes (is enabled by the appliance software) without problems.

When each of these conditions is met, the hardware installation is complete, and you should proceed to perform a basic configuration (see the software installation guide or user guide that shipped with your appliance for proper configuration procedures).

If you cannot locate the source of the problem, contact a customer service representative for information on how to proceed. For technical support information, see the *Cisco Information Packet* publication that shipped with your appliance. Before you call, have the following information ready:

- Appliance chassis type and serial number. (See the "Cisco Product Identification Tool" section on page 1-4 or the "Cisco Product Identification Tool" section on page A-7 for more information.)
- Maintenance agreement or warranty information (see the *Cisco Information Packet*)
- Type of software and version number (if applicable)
- Date you received the new appliance
- Brief description of the problem you are having and the steps you have taken to isolate and resolve the problem

Note Ensure you provide the customer service representative with any upgrade or maintenance information that was performed on the Cisco ADE 1010 and 2120 Series appliance after your initial installation. (See the "Creating a Site Log" section on page 2-14 and Appendix B, "Site Log," for Site Log information.)

Problem Solving

The key to problem solving is to isolate the problem to a specific location by comparing what the Cisco ADE 1010 and 2120 Series appliance is doing to what it should be doing.

In other words, when troubleshooting, define the specific symptoms, identify all potential problems that could be causing the symptoms, and then systematically eliminate each potential problem (from most likely to least likely) until the symptoms disappear.

The following steps provide guidelines to use in the problem-solving process.

Step 1 Analyze the problem and create a clear problem statement. Define symptoms and potential causes.

Step 2 Gather the facts that you need to help isolate possible causes.

Step 3 Consider possible causes based on the facts that you gathered.

Step 4 Create an action plan based on those causes. Begin with the most likely problem and devise a plan in which you manipulate only one variable.

Step 5 Implement the action plan. Perform each step carefully while testing to see whether the symptom disappears.

Step 6 Analyze the results to determine whether the problem has been resolved. If the problem was resolved, consider the process complete.

Step 7 If the problem has not been resolved, create an action plan based on the next most probable cause on your list. Return to Step 4 and repeat the process until the problem is solved.

Step 8 Make sure that you undo anything that you changed while implementing your action plan. Remember that you want to change only one variable at a time.

Note The LEDs on the front panel of the appliance enable you to determine appliance performance and operation. For a description of these LEDs, see the "Reading the LEDs" section on page A-5.

When problem solving, check the following appliance subsystems first:

- Power and cooling systems—External power source, power cable, and appliance fans. Also check for inadequate ventilation, air circulation, or environmental conditions.
- Adapter cards—Checking the LEDs on the adapter card can help you to identify a failure.
- Cables—Ensure that the external cables connecting the appliance to the network are all secure.

Troubleshooting the Power and Cooling Systems

Both the power LED and the fans can help you troubleshoot a power problem. Check the following items to help isolate the problem:

- When the Cisco ADE 1010 and 2120 Series appliance is connected to the power source, is the appliance power LED on the front panel on?
  - If not, check the AC power cord connection.
  - If the power LED is still off, the problem might be a power supply failure.
- Does the appliance shut down after being on for only a short time?
  - Check for an environmentally induced shutdown (see the "Environmental Reporting Features" section on this page).
  - Check the fans. If the fans are not working, the appliance will overheat and shut itself down.
  - If the fans are not working, you might need to check the power supply connections to the fans.

    Checking this connection will require you to shut down the appliance, remove any external cables, and open up the appliance. For more information, see the "Removing the Cover" section on page 4-3.
  - Ensure that the appliance intake and exhaust vents are clear.
  - Check the environmental site requirements in the "Temperature and Humidity Guidelines" section on page 2-9.
- Does the appliance partially boot, but the LEDs do not light?
  - Check for a power supply failure by inspecting the power LED on the front panel of the appliance. If the LED is on, the power supply is functional.
  - If the LED is off, refer to the *Cisco Information Packet* for warranty information or contact your customer service representative.

Environmental Reporting Features

The Cisco ADE 1010 and 2120 Series appliance has protection circuits that monitor and detect overcurrent, overvoltage, and overtemperature conditions inside the appliance. If the power supply shuts down or latches off, an AC cycle of off for 15 seconds and on for 1 second resets the power supply. For more information, see the "Environmental Monitoring" section on page 1-10.

The following conditions can cause an abnormally high appliance temperature:

- Fan failure
- Air conditioner failure in the room
- Airflow blocked to cooling vents

Take steps to correct the problem. For information about environmental operating conditions, see the "Temperature and Humidity Guidelines" section on page 2-9.

Troubleshooting Adapter Cards, Cables, and Connections

Network problems can be caused by an adapter card, cables or cable connections, or external devices such as a hub, wall jack, WAN interface, or terminal. Check for the following symptoms to help isolate the problem:

- Adapter card is not recognized by the Cisco ADE 1010 and 2120 Series appliance.
  - Make sure that the adapter card is firmly seated in its slot. For information on adapter card installation and removal, see the "Installing and Removing a PCI Adapter Card" section on page 4-21.
  - Check the LEDs on the adapter card. Each adapter card has its own set of LEDs. For information on these LEDs, see the "Reading the LEDs" section on page A-5.
  - Make sure that you have a version of software that supports the adapter card. Refer to the documentation that was included with your adapter card.
- Adapter card is recognized, but interface ports do not initialize.
  - Make sure that the adapter card is firmly seated in its slot. For information on adapter card installation and removal, see the "Installing and Removing a PCI Adapter Card" section on page 4-21.
  - Check external cable connections.
  - Make sure that you have a version of software that supports the adapter card. Refer to the documentation that was included with your adapter card.
- The Cisco ADE 1010 and 2120 Series appliance does not boot properly, or it constantly or intermittently reboots.
  - Make sure that the adapter card is firmly seated in its slot. For information on adapter card installation and removal, see the "Installing and Removing a PCI Adapter Card" section on page 4-21.
  - Check the appliance chassis or the application software. For warranty information, refer to the *Cisco Information Packet* publication that shipped with your appliance or contact your customer service representative.
- If you are using the console port with a terminal, and the Cisco ADE 1010 and 2120 Series appliance boots but the console screen is frozen.
  - Check the external console connection.
  - Verify that the parameters for your terminal are set as follows:

    (a) The terminal should have the same data rate that the appliance has (9600 bps is the default).

    (b) 8 data bits.

    (c) No parity generated or checked.

    (d) 1 stop bit.

- The Cisco ADE 1010 and 2120 Series appliance powers on and boots only when an adapter card is removed.
  - Check the adapter card. For warranty information, refer to the *Cisco Information Packet* publication that shipped with your appliance or contact your customer service representative.
- The Cisco ADE 1010 and 2120 Series appliance powers on and boots only when a particular cable is disconnected.
  - There might be a problem with the cable. For warranty information, refer to the *Cisco Information Packet* publication that shipped with your appliance or contact your customer service representative.

Reading the LEDs

There are several LEDs on the Cisco ADE 1010 and 2120 Series appliance. LEDs serve the following purposes:

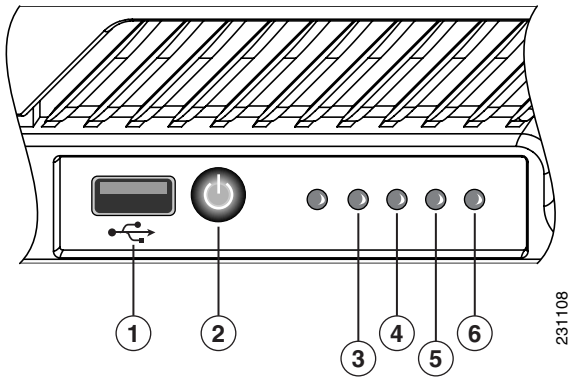
- Indicate that basic power is available to the appliance
- Guide you to a broken adapter card, or to one that has failed its diagnostics
- Give an indication that traffic is flowing through the adapter card to the appliance

The LEDs on the front panel of the Cisco ADE 1010 and 2120 appliance and corresponding adapter card are aids for determining appliance and adapter performance and operation.

Front-Panel LEDs

Figure A-1 shows the locations of the appliance's front-panel LEDs. Table A-1 describes these LEDs.

Figure A-1 Front-Panel LEDs



1	USB port	**4**	Hard Disk Drive Activity LED
2	Power button	**5**	NIC 1 LED
3	Appliance Power LED	**6**	NIC 2 LED

Table A-1 Front-Panel LED Descriptions

LED	Color	State	Description
Appliance Power	Green	On	Power on
	Green	Blinking	Sleep (standby)
	Off	Off	Power off
Hard Disk Drive Activity	Green	Random blinking	HDD activity
	Off	Off	No HDD activity
NIC 1 and NIC 2	Green	On	NIC link, no access
	Green	Blinking	LAN access

NIC LEDs

Figure A-2 shows the NIC 1 and NIC 2 LEDs located on the rear of the appliance. These LEDs indicate the connection activity and speed of the NIC ports. Table A-2 describes the activity and connection speed associated with each LED state.

Figure A-2 NIC 1 and NIC 2 LEDs

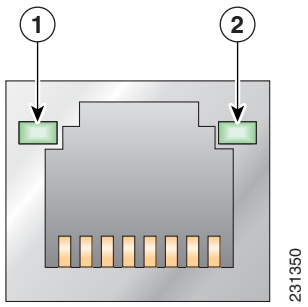


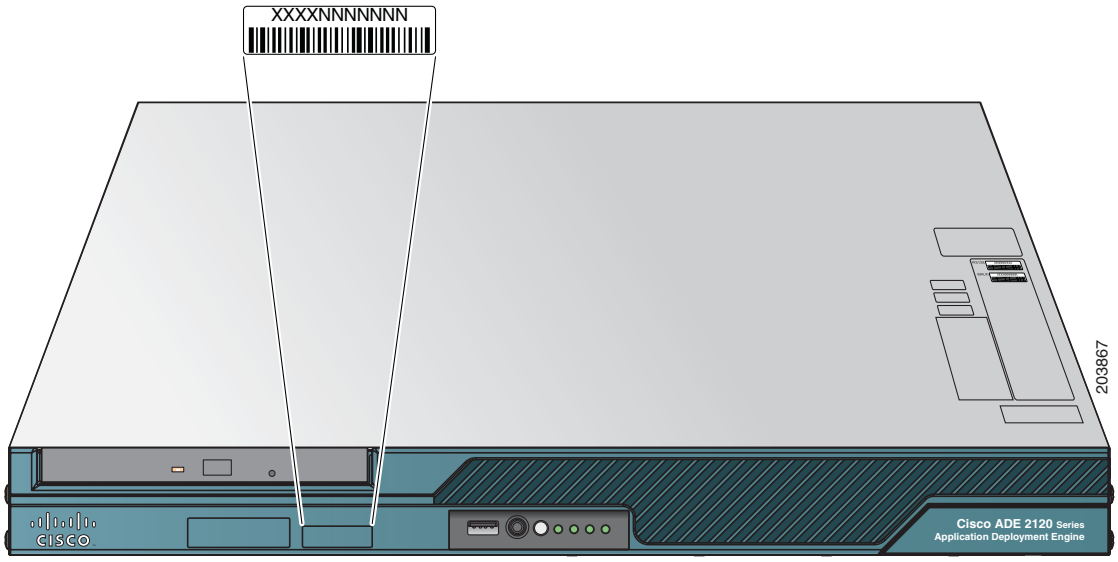
Table A-2 NIC 1 and NIC 2 LED Descriptions

LED	Color	State	Description
Left (1)		Off	No network connection
	Amber	Solid	Network connection
	Amber	Blinking	Transmit/receive activity
Right (2)		Off	10-Mb/s connection (if left LED is on or blinking)
	Amber	Solid	100-Mb/s connection
	Green	Solid	1000-Mb/s (or 1-Gb/s) connection

Product Serial Number Location

On the Cisco ADE 1010 and 2120 Series appliance, the serial number label is llocated on the front of the appliance, at the lower-left. (See Figure A-3.)

Figure A-3 Cisco ADE 1010 and 2120 Series Appliance Serial Number Location



Note The serial number for the Cisco ADE 1010 and 2120 Series appliance is 11 characters long.

Cisco Product Identification Tool

The Cisco Product Identification (CPI) tool helps you retrieve the serial number of your Cisco products.

Before you submit a request for service online or by phone, use the CPI tool to locate your product serial number. You can access this tool from the Cisco Support website by clicking the **Get Tools & Resources** link, clicking the **All Tools (A-Z)** tab, and then choosing **Cisco Product Identification Tool** from the alphabetical list.

This tool offers three search options:

- Search by product ID or model name
- Browse for Cisco model
- Copy and paste the output of the **show** command to identify the product

Search results show an illustration of your product with the serial number label location highlighted. Locate the serial number label on your product and record the information before you place a service call.

The CPI tool is accessed via Cisco.com at the following URL:

http://tools.cisco.com/Support/CPI/index.do

Access to the CPI tool on the Cisco Support website requires a Cisco.com user ID and password. If you have a valid service contract but do not have a user ID or password, you can register at:

http://tools.cisco.com/RPF/register/register.do

APPENDIX B

Site Log

The Site Log provides a record of all actions related to installing and maintaining the Cisco ADE 1010 and 2120 Series appliance. Keep the log in an accessible place near the appliance chassis so that anyone who performs tasks has access to it. Use the Installation Checklist (see the "Installation Checklist" section on page 2-14) to verify the steps in the installation and maintenance of your appliance.

Site Log entries might include the following:

- Installation progress—Make a copy of the appliance Installation Checklist, and insert it into the Site Log. Make entries as you complete each task.
- Upgrade, removal, and maintenance procedures—Use the Site Log as a record of ongoing appliance maintenance and expansion history. Each time a task is performed on the appliance, update the Site Log to reflect the following information:
  - Configuration changes
  - Maintenance schedules and requirements
  - Maintenance procedures performed
  - Intermittent problems
  - Comments and notes

Table B-1 on page B-2 shows a sample site log. Make copies of the sample or design your own site log to meet the needs of your site and equipment.

Table B-1 Site Log

Date	Description of Action Performed or Symptom Observed	Initials

APPENDIX C

Maintaining the Cisco ADE 1010 and 2120 Appliance

Your Cisco ADE 1010 and 2120 Series appliance is configured to your order and is ready for installation and startup when it leaves the factory. After you install and configure your appliance, you might have to perform specific maintenance procedures and operations to ensure that the appliance is operating properly.

These preventive maintenance procedures can keep your appliance in top operating condition and minimize the need for costly, time-consuming service procedures.

Caution To help prevent problems, before performing any procedures in this chapter, review the "Safety Warnings" section on page ix and the "Safety Guidelines" section on page 2-2.

The following sections discuss various environmental factors that can adversely affect appliance performance and longevity.

Maintaining Your Site Environment

Good preventive maintenance includes regular visual inspections of the appliance including exterior cleaning and inspection.

Other important areas are:

- Cooling, page C-3
- Temperature, page C-3
- Humidity, page C-3
- Altitude, page C-4
- Electrostatic Discharge, page C-4
- Electromagnetic and Radio Frequency Interference, page C-4
- Magnetism, page C-5
- Power Source Interruptions, page C-5

General Exterior Cleaning and Inspection

This section details the cleaning requirements for exterior surfaces of the appliance and the inspection of cables and adapter cards.

Caution Never spray cleaning solution on the surfaces of the appliance. Overspray can penetrate into the appliance and cause electrical problems and corrosion.

Appliance

Use a lint-free, nonabrasive cloth to perform cleaning. *Do not* use a solvent, abrasive cleaning agents, or tissue paper. If the appliance is dirty (for example, with thick dust), use a soft damp cloth and wipe the surface of the appliance gently.

Immediately wipe off any water or liquid from the appliance.

Dust and Particles

A clean operating environment can greatly reduce the negative effects of dust and other particles, which act as insulators and interfere with the operation of an appliance's mechanical components. In addition to regular cleaning, you should follow these guidelines to deter contamination of the appliance:

- Do not permit smoking anywhere near the appliance.
- Do not permit food or drink near the appliance.

Cables and Connectors

Inspect cables and connectors to and from your appliance periodically to see if they are worn out or loose.

Adapter Cards

Check the connections on the adapter cards. Be sure they are secured to the appliance and have not been jarred loose or mechanically damaged.

Corrosion

The oil from a person's fingers or prolonged exposure to high temperature or humidity can corrode the gold-plated edge connectors and pin connectors on adapter cards in the appliance. This corrosion on adapter card connectors is a gradual process that can eventually lead to intermittent failures of electrical circuits.

To prevent corrosion, you should avoid touching contacts on adapter cards. Protecting the appliance from corrosive elements is especially important in moist and salty environments, which tend to promote corrosion. Also, as a further deterrent to corrosion, the appliance should not be used in extreme temperatures, as explained in the "Temperature" section on page C-3.

Cooling

Exhaust fans in the power supply and in the appliance itself cool the power supply and the appliance by drawing air in through various openings in the front of the appliance and blowing it out the back. However, the fans also draw dust and other particles into the appliance, causing contaminant buildup, which results in an increase in the appliance's internal temperature and interferes with the operation of various appliance components.

To avoid these conditions, we recommend keeping your work environment clean to reduce the amount of dust and dirt around the appliance, thereby reducing the amount of contaminants drawn into the appliance by the fans.

Temperature

Temperature extremes can cause a variety of problems, including premature aging and failure of chips or mechanical failure of devices. Extreme temperature fluctuations can cause chips to become loose in their sockets and can cause expansion and contraction of disk drive platters, resulting in read or write data errors.

To minimize the negative effects of temperature on appliance performance, follow these guidelines:

- Ensure that the appliance is operated in an environment no colder than 50°F (10°C) or hotter than 95°F (35°C).
- Ensure that the appliance has adequate ventilation. Do not place it within a closed-in wall unit or on top of cloth, which can act as insulation. Do not place it where it will receive direct sunlight, particularly in the afternoon. Do not place it next to a heat source of any kind, including heating vents during winter.

Adequate ventilation is particularly important at high altitudes. Appliance performance may not be optimum when the appliance is operating at high temperatures as well as high altitudes.

- Make sure that all slots and openings on the appliance remain unobstructed, especially the fan vents on the back of the appliance.
- Clean the appliance at regular intervals to avoid any buildup of dust and debris, which can cause an appliance to overheat.
- If the appliance has been exposed to abnormally cold temperatures, allow a 2-hour warm-up period to bring it up to normal operating temperature before turning it on. Failure to do so may cause damage to internal components, particularly the hard disk drive.

Humidity

High-humidity conditions can cause moisture migration and penetration into the appliance. This moisture can cause corrosion of internal components and degradation of properties such as electrical resistance, thermal conductivity, physical strength, and size. Extreme moisture buildup inside the appliance can result in electrical shorts, which can cause serious damage to the appliance.

Each appliance is rated to operate at 8 to 80 percent relative humidity, with a humidity gradation of 10 percent per hour. Buildings in which climate is controlled by air conditioning in the warmer months and by heat during the colder months usually maintain an acceptable level of humidity for appliances. However, if an appliance is located in an unusually humid location, a dehumidifier can be used to maintain the humidity within an acceptable range.

Altitude

Operating an appliance at high altitude (low pressure) reduces the efficiency of forced and convection cooling and can result in electrical problems related to arcing and corona effects. This condition can also cause sealed components with internal pressure, such as electrolytic capacitors, to fail or perform at reduced efficiency.

Electrostatic Discharge

Electrostatic discharge (ESD) results from the buildup of static electricity on the human body and certain other objects. This static electricity is often produced by simple movements, such as walking across a carpet. ESD is a discharge of a static electrical charge that occurs when a person whose body contains such a charge touches a component in the appliance. This static discharge can cause components, especially chips, to fail. ESD is a problem particularly in dry environments where the relative humidity is below 50 percent.

To reduce the effects of ESD, you should observe the following guidelines:

- Wear a grounding wrist strap. If a grounding wrist strap is unavailable, touch an unpainted metal surface on the appliance chassis periodically to neutralize any static charge.
- Keep components in their antistatic packaging until they are installed.
- Avoid wearing clothing made of wool or synthetic materials.

Electromagnetic and Radio Frequency Interference

Electromagnetic interference (EMI) and radio frequency interference (RFI) from an appliance can adversely affect devices such as radio and television (TV) receivers operating near the appliance. Radio frequencies emanating from an appliance can also interfere with cordless and low-power telephones.

RFI is defined as any EMI with a frequency above 10 kilohertz (kHz). This type of interference can travel from the appliance to other devices through the power cable and power source or through the air like transmitted radio waves. The Federal Communications Commission (FCC) publishes specific regulations to limit the amount of EMI and RFI emitted by computing equipment. Each appliance meets these FCC regulations.

To reduce the possibility of EMI and RFI, follow these guidelines:

- Operate the appliance only with the appliance cover installed.
- Ensure that the screws on all peripheral cable connectors are securely fastened to their corresponding connectors on the back of the appliance.
- Always use shielded cables with metal connector shells for attaching peripherals to the appliance.

Magnetism

Because they store data magnetically, hard disk drives are susceptible to the effects of magnetism. Hard disk drives should never be stored near magnetic sources such as the following:

- Monitors
- Printers
- Telephones with real bells
- Fluorescent lights

Power Source Interruptions

Appliances are especially sensitive to variations in voltage supplied by the AC power source. Overvoltage, undervoltage, and transients (or spikes) can erase data from the memory or even cause components to fail. To protect against these types of problems, power cables should always be properly grounded and one or both of the following methods should be used:

- Place the appliance on a dedicated power circuit (rather than sharing a circuit with other electrical equipment). In general, do not allow the appliance to share a circuit with any of the following:
  - Copier machines
  - Teletype machines
  - Laser printers
  - Facsimile machines
  - Any other motorized equipment

Besides the above equipment, the greatest threats to an appliance's supply of power are surges or blackouts caused by electrical storms.

If a blackout occurs—even a temporary one—while the appliance is turned on, turn off the appliance immediately and disconnect it from the electrical outlet. Leaving the appliance on may cause problems when the power is restored.

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